Vol. 1009 Number 4

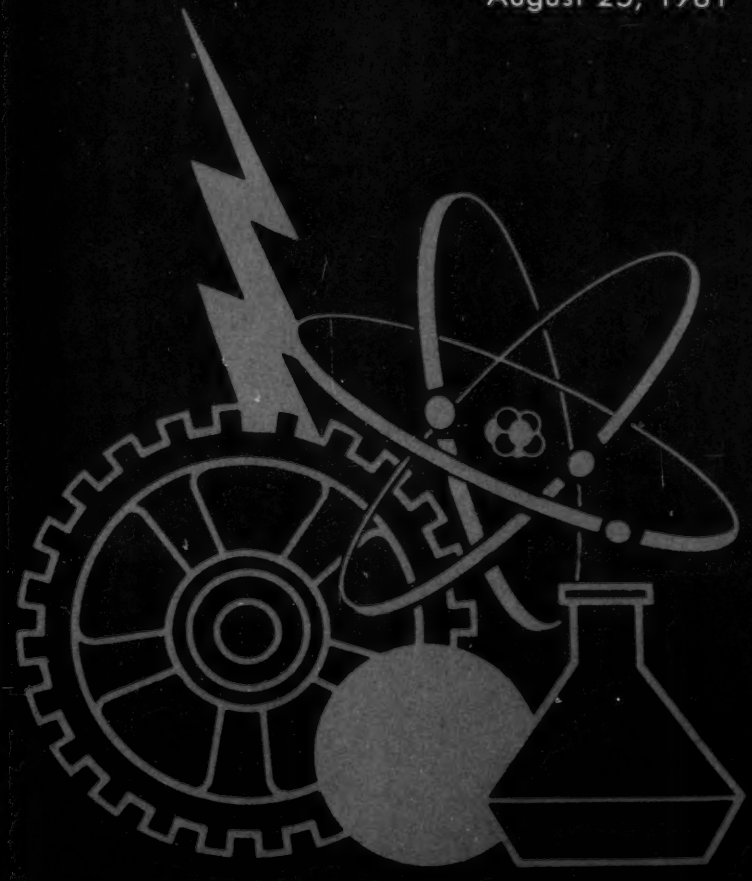
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 25, 1981



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

August 25, 1981 Volume 1009 Number 4

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,841,509, Re. S.N. 263,560, Filed May 14, 1981, Cl. 414/477, APPARATUS FOR TRANSPORTING ONE VEHICLE BY ANOTHER, Finis Lavell Chisum, Owner of Record: *Inventor,* Attorney or Agent: William R. Laney, et al., Ex. Gp.: 314

4,074,822, Re. S.N. 263,561, Filed May 14, 1981, Cl. 414/475, METHOD AND APPARATUS FOR TRANSPORTING ONE VEHICLE BY ANOTHER, Finis Lavell Chisum, Owner of Record: *Inventor,* Attorney or Agent: William R. Laney, et al., Ex. Gp.: 314

4,191,129, Re. S.N. 226,921, Filed Jan. 21, 1981, Cl. 119/.005, ART OF EXHIBITING FISH, Arthur B. Renny, Owner of Record: *Inventor,* Attorney or Agent: William L. Fisher, Ex. Gp.: 333

4,230,615, Re. S.N. 252,248, Filed Apr. 8, 1981, Cl. 260/034.2, PROCESS FOR CONTROLLED MIXING IN A HIGH INTENSITY MIXER, Zenas Crocker, Owner of Record: *Carlew Chemicals Ltd., Quebec, Canada,* Attorney or Agent: Roberts B. Larson, Ex. Gp.: 144

4,236,735, Re. S.N. 263,490, Filed May 14, 1981, Cl. 285/114, FITMENT FOR A VESSEL, John D. Allen, Owner of Record: *Inventor,* Attorney or Agent: Lloyd A. Heneveld, et al., Ex. Gp.: 353

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

Re. 28,176, Reexam. No. 90/000,034, Requested: July 27, 1981, Cl. 248/642, BRACKET FOR MOUNTING BOAT ACCESSORY, George F. Horton, Owner of Record: *Inventor,* Attorney or Agent: Wofford, Fails & Zobal, Ex. Gp.: 355, Requester: Anderson-Needham Sales Co., Fort. Worth, Tex.

3,395,434, Reexam. No. 90/000,024, Requested: July 10, 1981, Cl. 407/114, CUTTING INSERT FOR CHIP CUTTING MACHINE, Sven Axel Olof Wirfelt, Owner of Record: *Sandvikens Jernverks AB,* Attorney or Agent: Burns, Doane, et al., Ex. Gp.: 324, Requester: Sandvik Aktiebolag, Sandviken, Sweden

3,614,368, Reexam. No. 90/000,039, Requested: July 29, 1981, Cl. 219/69C, ELECTRICAL DISCHARGE MACHINING SHORT CIRCUIT PROTECTION SYSTEM OF THE KEYED TYPE, Walter Lobur, Owner of Record: *Colt Industries Operating Corp.,* Attorney or Agent: Radford W. Luther, Ex. Gp.: 213, Requester: Colt Industries Operating Corp., Chicago, Ill.

3,708,779, Reexam. No. 90/000,032, Requested: July 23, 1981, Cl. 339/99R, WIRE-SPLICING APPARATUS AND METHOD, Dennis J. Enright, et al., Owner of Record: *Minnesota Mining & Mfg. Co.,* Attorney or Agent: Kinney, Alexander, et al., Ex. Gp.: 322, Requester: Minnesota Mining & Mfg. Co., St. Paul, Minn.

4,016,395, Reexam. No. 90/000,040, Requested: July 29, 1981, Cl. 219/69W, WIRE ELECTRODE FEED FOR ELECTRICAL DISCHARGE MACHINING, Frank P. Rietveld, Owner of Record: *Colt Industries Operating Corp.,* Attorney or Agent: Harry R. Dumont, Ex. Gp.: 213, Requester: Colt Industries Operating Corp., Chicago, Ill.

4,052,229, Reexam. No. 90/000,036, Requested: July 28, 1981, Cl. 148/1.5, PROCESS FOR PREPARING A SUBSTRATE FOR MOS DEVICES OF DIFFERENT THRESHOLDS, Richard D. Pashley, Owner of Record: *Intel Corp.,* Attorney or Agent: Blakely, Sokoloff, et al., Ex. Gp.: 111, Requester: Lyon & Lyon, Washington, D.C.

4,129,021, Reexam. No. 90/000,035, Requested: July 27, 1981, Cl. 70/456, CLOSURE DEVICE, Attilio Brentini, Owner of Record: *Inventor,* Attorney or Agent: Groff & Groff, Ex. Gp.: 350, Requester: John P. Snyder, Washington, D.C.

4,148,414, Reexam. No. 90/000,033, Requested: July 23, 1981, Cl. 212/278, ROW CROP PLANTER, Earl R. Parks, Jr., Owner of Record: *Inventor,* Attorney or Agent: Oltsch, Knoblock & Hall, Ex. Gp.: 310, Requester: International Harvester Co., Chicago, Ill.

4,162,351, Reexam. No. 90/000,037, Requested: July 29, 1981, Cl. 429/15, METAL-HALOGEN CELL OPERATION WITH STORAGE OF HALOGEN VIA ORGANIC COMPLEXATION EXTERNAL TO THE ELECTROCHEMICAL CELL, Ronald A. Putt, et al., Owner of Record: *Gould, Inc.,* Attorney or Agent: Leydig, Voit, Osann, Mayer & Holt Ltd., Ex. Gp.: 111, Requester: Exxon Research & Engineering Co., Florham Park, N.J.

Vacancy Announcement
Chairman, Trademark Trial and Appeal Board

In accordance with the Senior Executive Service, the position of Chairman of the Trademark Trial and Appeal Board is being advertised. This appointment will be made at a salary of $50,113 per annum, which is the cur-

rent statutory limit before awards and bonuses are distributed.

Persons interested in being considered for the vacancy, PTO-81-112, are invited to submit their applications to the address given below, on or before Sept. 30, 1981. Applications must be in the Office of Personnel by Sept. 30, 1981. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as Chairman, Trademark Trial and Appeal Board. Manages the administrative functions of the Board and supervises the technical work of the Board. As a member of the TTAB, exercises original jurisdiction in *inter partes* proceedings and appellate jurisdiction of *ex parte* appeals. Renders written decisions representing the position of the PTO.

Qualifications: Evaluation of qualified candidates will be on the basis of education (self-development), awards, supervisory performance appraisals, managerial/executive qualifications and technical/professional qualifications. Candidates should address all these qualifications in their supplemental statements. Copies of the Qualification Standard are available in Crystal Plaza 2, Room 9C05.

Factors Which Will be Considered in Evaluating Qualified Candidates:

The six managerial/executive factors for SES positions are:

1. Integration of internal and external program policy issues;
2. Organization representation and liaison;
3. Direction and guidance of program, projects or policy development;
4. Resource acquisition and administration;
5. Utilization of human resources;
6. Review of implementation and results.

The technical/professional qualifications are:

1. Law degree and bar membership;
2. Professional legal experience which has provided a comprehensive knowledge of Appellate matters in Trademark law, rules of evidence, the Federal Rules of Civil Procedures, and general principles of ancillary legal subjects;
3. Demonstrated ability to express thoroughly, clearly and accurately the material facts, legal principles and reasons for arriving at a stated conclusion by the application of law to the facts.

Employees of the Department of Commerce may apply by submitting a Merit Program Interest Statement (CD-261), OPM Form 1386, current performance appraisal, updated Personal Qualifications Statement (SF-171) and supplemental statement showing how the qualifications are met. Persons who are not employees of the Department of Commerce should submit a current performance appraisal, Personal Qualifications Statement (SF-171), OPM Form 1386, and supplemental statement. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Crystal Plaza 2, Room 9C05
2011 Jefferson Davis Hwy.
Arlington, Va. 22202

Questions concerning this notice should be directed to Ms. Marilyn Gannon, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

MARGARET M. LAURENCE
July 27, 1981 *Assistant Commissioner for Trademarks.*

Consolidated Certificates Under Trademark Rule 2.88

Trademark Rule 2.88 provides as follows:

Applications may be consolidated.

a. When several applications have been filed by the same applicant for registration on the same register of a mark shown in identical form on the drawings for goods and/or services in different classes and each of the applications has been allowed, a single certificate based on such applications may be issued. A request for the issuance of a consolidated certificate must be made of record in each of the applications involved prior to the allowance of any of the applications.
b. The issuance of any original certificate may be suspended upon request of the applicant for a period not exceeding 6 months, to permit such consolidation.

The resulting certificate of registration is known as a consolidated certificate.

Because Rule 2.88 is seldom invoked and because the issuance of consolidated certificates entails undue administrative effort, the Patent and Trademark Office will soon be publishing for comment a proposal to eliminate the rule.

In the meantime, any applicant seeking registration of a single mark for more than one class of goods and/or services is encouraged to use the multiple-class application procedure set forth in Trademark Rule 2.87, rather than the consolidated application procedure set forth in Trademark Rule 2.88.

MARGARET M. LAURENCE
July 29, 1981 *Assistant Commissioner for Trademarks.*

PATENT NOTICES

Certificates of Correction for the Week of Aug. 25, 1981

Re. 30,053	4,250,673	4,264,003	4,270,380
Re. 30,497	4,250,689	4,264,166	4,270,501
Re. 30,622	4,250,796	4,264,268	4,270,529
D. 259,373	4,251,835	4,264,325	4,270,622
3,798,670	4,251,978	4,264,398	4,270,635
3,830,306	4,251,999	4,264,681	4,270,675
3,900,943	4,252,069	4,264,754	4,270,693
3,954,833	4,252,558	4,264,867	4,270,712
4,074,413	4,252,644	4,264,953	4,270,759
4,099,015	4,252,961	4,265,091	4,270,762
4,112,224	4,253,369	4,265,106	4,270,811
4,113,729	4,253,394	4,265,122	4,271,120
4,145,359	4,253,598	4,265,211	4,271,201
4,157,621	4,253,877	4,265,581	4,271,208
4,164,358	4,254,057	4,265,609	4,271,244
4,205,007	4,254,760	4,265,646	4,271,258
4,217,356	4,255,137	4,265,887	4,271,357
4,217,588	4,255,617	4,266,197	4,271,376
4,221,728	4,255,623	4,266,223	4,271,597
4,224,214	4,256,709	4,266,458	4,271,643
4,224,215	4,256,751	4,266,547	4,271,864
4,225,700	4,256,821	4,266,904	4,272,099
4,227,418	4,256,926	4,266,925	4,272,168
4,230,372	4,257,003	4,267,065	4,272,270
4,235,763	4,257,146	4,267,135	4,272,271
4,236,320	4,257,942	4,267,196	4,272,381
4,238,093	4,258,135	4,267,297	4,272,565
4,239,183	4,258,449	4,267,372	4,272,686
4,239,673	4,258,908	4,267,631	4,272,761
4,239,726	4,259,044	4,267,767	4,272,778
4,240,581	4,259,176	4,267,784	4,272,797
4,241,136	4,259,245	4,267,876	4,272,807
4,241,330	4,259,862	4,267,984	4,273,050
4,241,542	4,259,961	4,267,987	4,273,080
4,242,473	4,260,586	4,268,033	4,273,280
4,242,682	4,260,728	4,268,038	4,273,293
4,243,221	4,260,811	4,268,098	4,273,318
4,243,511	4,260,825	4,268,216	4,273,457
4,243,586	4,260,826	4,268,579	4,273,510
4,243,639	4,261,008	4,268,672	4,273,519
4,243,904	4,262,317	4,268,697	4,273,651
4,243,948	4,262,497	4,268,742	4,273,670
4,244,959	4,262,723	4,268,804	4,273,684
4,245,001	4,262,791	4,268,828	4,273,879
4,245,202	4,262,853	4,269,115	4,273,978
4,246,350	4,263,024	4,269,188	4,273,997
4,246,538	4,263,128	4,269,226	4,274,017
4,246,710	4,263,166	4,269,560	4,274,067
4,247,545	4,263,230	4,269,662	4,274,121
4,247,551	4,263,278	4,269,721	4,274,215
4,248,241	4,263,538	4,269,753	4,274,738
4,248,762	4,263,582	4,269,777	4,274,842
4,248,935	4,263,792	4,270,072	4,274,912
4,250,148	4,263,803	4,270,371	4,275,318

Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

2,918,934, Charles Wheatley Co., CHECK VALVE, **filed** Apr. 30, 1981, D.C., N.D. Okla. (Tulsa), Doc. 81-C-195-E, *J. Duncan McNeill, et al.* v. *Geosource, Inc.*

3,031,450, Boehringer Ingelheim, G.m.b.H., SUBSTITUTED PYRIMIDO-[5,4-D]-PYRIMIDINES, **filed** Dec. 18, 1980, D.C.N.J. (Newark), Doc. 80-4049, *Boehringer Ingelheim G.m.b.H.* v. *Bolar Pharmaceutical Co.* Order dismissing action without costs filed Apr. 28, 1981.

3,365,800, Richard F. Carella, ARCHERY BOW SIGHT ASSEMBLY, **filed** May 6, 1981, D.C., E.D. Mich. (Bay City), Doc. 81-30037, *Richard F. Carella* v. *Starlight Archery.*

3,394,941, W. S. Shamban & Co., SEALING RING ASSEMBLY, **filed** Dec. 22, 1980, D.C.N.J. (Newark), Doc. 80-4089, *W. S. Shamban & Co.* v. *C. E. Conover & Co.* Stipulation and order dismissing action filed May 5, 1981.

3,463,889, Shure Brothers, Inc., MOVING MAGNET STEREOPHONIC PICKUP, **filed** Apr. 30, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2454, *Shure Brothers, Inc.* v. *Pickering & Co., Inc., et al.*

3,465,441, Oratronics, Inc., RING-TYPE IMPLANT FOR ARTIFICIAL TEETH; **3,729,825,** same, ORAL IMPLANT; **3,905,108,** same, INTRAMUCOSAL DENTURE SYSTEM, **filed** May 8, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2794, *Oratronics, Inc.* v. *Park Dental Research Corp.*

3,483,782, Vamco Machine and Tool, Inc., SELF-CONTAINED FEED ROLL FOR POWER PUNCH PRESSES; **Re. 29,795,** same, **filed** Apr. 24, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2302, *Vamco Machine and Tool, Inc.* v. *F. J. Littell Machine Co.*

3,588,917, Anthony J. Antonious, GOLF GLOVE, **filed** Mar. 5, 1980, D.C., E.D. Tenn. (Chattanooga), Doc. 1-80-51, *Anthony J. Antonious* v. *Progroup, Inc.* Judgment entered in favor of plaintiff on May 4, 1981.

3,675,891, Le Voy's, Inc., CONTINUOUS CATHETER FLUSHING APPARATUS, **filed** Apr. 1, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 1599, *Sorenson Research Co.* v. *Gould Inc.*

3,729,825. (See 3,465,441.)

3,732,808, Polychrome Corp., APPARATUS FOR DEVELOPING OFFSET PRINTING PLATES, **filed** June 18, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 3161, *Polychrome Corp.* v. *Freundorfer, Inc.* Stipulation to dismiss without prejudice filed Oct. 15, 1980.

3,780,502, National Foundry Equipment Co., Inc., COLLECTOR APPARATUS, **filed** Apr. 16, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 2154, *NFE International Ltd.* v. *Pneu-Con Corp., Inc.*

3,842,457, Elliott C. Johnson, BEE FEEDER, **filed** Mar. 23, 1981 D.C., M.D. Ga. (Macon), Doc. CA-81-16-VAL, *Valley Honey Association* v. *Dadant & Sons, Inc.*

3,854,470, Lynn L. Augspurger, REPRODUCTION PROCESSES FOR CELLULAR BODIES, **filed** Feb. 17, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 818, *Lynn L. Augspurger* v. *Robert Miller.* **Same, filed** Feb. 23, 1981, D.C., W.D. Mich. (Grand Rapids), Doc. G81-80 ca(1), *Lynn L. Augspurger* v. *American Embryos, Inc.*

3,890,655, Cleo D. Mathis, WHIRLPOOL JET FOR BATHTUBS; **3,890,656,** same, **3,946,449,** same; **D. 244,462,** same, WHIRLPOOL JET NOZZLE FOR BATHTUBS AND THE LIKE, **filed** Apr. 3, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 1631Kn(Mx), *Cleo D. Mathis, et al.* v. *Philip E. Chalberg, et al.*

3,890,656. (See 3,890,655.)

3,905,108. (See 3,465,441.)

3,912,083, Jarke Corp., MODULAR STORAGE

FRAME FOR FLAT SHEET MATERIALS, **filed** June 4, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 2831, *Jarke Corp.* v. *Myers Trucking & Castor Co.* Cause transferred to Middle District of Tennessee on Dec. 15, 1980.

3,921,356, Oakwood Manufacturing, Inc., SYSTEM AND APPARATUS FOR INTERCONNECTING STRUCTURAL MEMBERS, AND METHOD OF UTILIZING SAME; **4,081,940,** same, **filed** Feb. 22, 1979, D.C., N.D. Ohio (Cleveland), Doc. C79-348, *Cardinal American Corp.* v. *Oakwood Manufacturing, Inc.*

3,946,449. (See 3,890,655.)

3,968,879, George A. Lucas & Sons, SHIPPING CONTAINER AND ASSEMBLY THEREOF, **filed** May 19, 1978, D.C., E.D. Calif. (Fresno), Doc. F-78-107, *George A. Lucas & Sons* v. *Styro Tek Inc.* Decision filed Mar. 27, 1981 that Pat. No. 3,968,879 is invalid and unenforceable.

4,023,227, Fernand L. O. J. Chauvier, APPARATUS FOR CLEANING SUBMERGED SURFACES, **filed** Dec. 9, 1980, D.C., E.D. Calif. (Fresno), Doc. F-80-286-MDC, *Fernand L. O. J. Chauvier, et al.* v. *Ewell Peden, et al.*

4,027,624, Freund Industrial Co., Ltd., FLUID GRANULATING/COATING APPARATUS UTILIZING SUCTION AIR CURRENT, **filed** Jan 4, 1980, D.C. Dist. of Columbia (Wash. D.C.), Doc. 80-0023, *Glatt Air Techniques, Inc.* v. *Freund Industrial Co., Ltd.* Stipulation of dismissal without prejudice filed Apr. 7, 1981.

4,070,022, Precision Shaft Corp., MATCHED GOLF SHAFTS AND CLUBS, **filed** Mar. 31, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-587, *Precision Shaft Corp.* v. *True Temper Sports.*

4,081,940. (See 3,921,356.)

4,095,679, Robert W. Walker, STOP MEANS FOR SELF-PROPELLED SPRINKLER, **filed** Mar. 24, 1981, D.C. Neb. (Omaha), Doc. 81-0-150, *Robert W. Walker* v. *John Kreger, doing business as Plains Manufacturing, et al.*

4,102,383, Clopay Corp., WINDOW SHADE; **4,102,384,** same, **filed** Mar. 26, 1981, D.C. Del. (Wilmington), Doc. 81-124, *Clopay Corp.* v. *Graber Industries, Inc.* **Same, filed** Mar. 18, 1981, D.C.S.C. (Columbia), Doc. 81-515-5, *Clopay Corp.* v. *Springs Mills, Inc.* Voluntary Dismissal filed Apr. 2, 1981.

4,102,384, Clopay Corp., WINDOW SHADE, **filed** Mar. 18, 1981, D.C. Del. (Wilmington), Doc. 81-110, *Clopay Corp.* v. *Newell Companies, Inc.*

4,102,384. (See 4,102,383.)

4,115,940, A. & E. Warbern, Inc., GARMENT HANGER WITH SIZE INDICATOR, **filed** Apr. 29, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2588 HFW, *A & E Products Group Inc.* v. *M & F Hangers, Inc.*

4,124,201, Robert E. Burton, KNOCKDOWN SPRING UNIT, **filed** Mar. 31, 1981, D.C., N.D.N.Y. (Utica), Doc. 81-Civ-292, *Futorian Corp.* v. *Robert E. Burton.*

4,128,198, Investment Technology, Inc., ENDLESS TAPE LOOP STORAGE APPARATUS, **filed** Mar. 20, 1980, D.C., N.D. Calif. (San Francisco), Doc. 80-0867RHS, *Investment Technology, Inc.* v. *Accurate Sound Corp.* Stipulation and order dismissing action with prejudice filed May 7, 1981.

4,141,070, Cornell-Dubilier Electric Corp., ELECTROLYTIC CAPACITORS, **filed** Apr. 24, 1981, D.C., W.D. Kentucky (Bowling Green), Doc. 81-0056 BG (J), *Cornell-Dubilier Electric Corp.* v. *Emhart Industries, Inc.*

4,167,251, Canica Crushers, Ltd., LIFTER FOR ROCK CRUSHER LID, **filed** Mar. 26, 1981, D.C., E.D. Wash. (Spokane), Doc. C-81-151-RJM, *Canica Crushers, Ltd.* v. *Spokane Crushers Manufacturing Co.*

4,171,026, Wirth, Gallo & Co., SCALE WITH A COMPUTING DEVICE AND A DIGITAL DISPLAY, IN PARTICULAR FOR COMMERCIAL APPLICATIONS, **filed** Mar. 31, 1981, D.C., E.D. Pa. (Philadelphia), Doc. 81-1252, *Wirth, Gallo & Co.* v. *Pennsylvania Scale Co.*

4,173,910, Lineberry, Buckner, and Harris, METHOD AND APPARATUS FOR HANDLING BRICK, **filed** Apr. 20, 1981, D.C., M.D.N.C. (Greensboro), Doc. C-81-172-G, *Auto-Systems and Service, Inc.* v. *Clarksville Machine Works, Inc.*

4,175,601, Gustave C. Meyer, III, HAND-HELD WEDGE TOOL FOR SPLITTING WOOD, **filed** Aug. 5, 1980, D.C.N.J. (Newark), Doc. 80-2499, *Gustave C. Meyer, III* v. *Colonial Tool Co., Inc., et al.* Stipulation and Order for permanent injunction filed Apr. 7, 1981.

4,179,152, James K. Kent, Jr., METHOD AND APPARATUS FOR SECURING FABRIC TOPS TO A VEHICLE, **filed** Sept. 26, 1980, D.C. Colo. (Denver), Doc. 80-K-1289, *James K. Kent, Jr.* v. *Bestop Manufacturing, Inc.* Order of default judgment and dismissal filed Jan. 5, 1981.

4,179,753, Aronberg and Fein, HEADGEAR WITH EYEGLASS SUPPORT, **filed** June 13, 1980, D.C., S.D.N.Y., Doc. 80-Civ-3372 CBM, *Sport Eyes, Inc.* v. *Commodore Corp., et al.* Action discontinued with prejudice to both parties on Apr. 15, 1981.

4,184,429, Max Widner, CONSTANT BEVEL DOCTOR BLADE AND METHOD AND APPARATUS USING SAME, **filed** Mar. 24, 1981, D.C., E.D. Pa. (Philadelphia), Doc. 81-1140, *Max Daetwyler Corp.* v. *Input Graphics, Inc.*

4,186,821, McNeill Corp., LUBRICATING APPARATUS, **filed** Mar. 26, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 1481, *Houdaille Industries, Inc.* v. *McNeill Corp.* Dismissal order by consent without prejudice filed Sept. 19, 1980.

4,199,606, Bobby J. Bland, PROPIONIC ACID ON A CARRIER MATERIAL AS A PRESERVATIVE, **filed** May 22, 1980, D.C., N.D. Ga. (Atlanta), Doc. C80-886A, *Anitox Corp. and Bobby J. Bland* v. *New South Manufacturing Co., et al.* Defendants are enjoined and restrained from infringing Pat. No. 4,199,606. Filed Apr. 23, 1981.

4,218,107, Anton/Bauer, Inc., BATTERY PACK CONNECTION, **filed** Nov. 3, 1980, D.C.N.J. (Newark), Doc. 80-3557, *Anton/Bauer, Inc.* v. *Frezzolini Electronics, Inc.* Stipulation and Order of dismissal of action, without costs filed Apr. 30, 1981.

4,227,340, Adolph E. Goldfarb, PLAY SET, **filed** Apr. 17, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2371 (WK), *Knickerbocker Toy Co., Inc.* v. *Nasta Industries, Inc.*

4,236,529, Daig Corp., TINED LEAD, **filed** Dec. 16, 1980, D.C. Minn. (Minneapolis), Doc. 4-80 Civil 611, *Daig Corp.* v. *Medtronic, Inc.*

Re. 29,050, Louise Z. Hakim, TOY WITH SOUND PRODUCING MEANS, **filed** May 6, 1981, D.C., S.D.N.Y., Doc. 81-Civ-2711, *Louise Z. Hakim* v. *Sanitoy Inc.*

Re. 29,795. (See 3,483,782.)

Re. 30,159, Barmer Maschinenfabrik Aktiengesell - schaft, FALSE TWIST-CRIMPING MACHINE, **filed** Apr. 10, 1981, D.C., W.D.N.C. (Charlotte), Doc. C-C-81-0151, *Barmag Barmer Maschinenfabrik AG* v. *Murata Machinery, Ltd., et al.*

D. 216,209, Louis Marx & Co., Inc., TRICYCLE, **filed** Apr. 8, 1981, D.C.N.J. (Newark), Doc. 81-1019, *Marx Toys, Ltd.* v. *Coleco Industries, Inc., et al.*

D. 226,451, National Air Vibrator Co., Inc., VIBRATOR FOR MATERIAL HANDLING OR THE LIKE, **filed** Apr. 28, 1981, D.C., N.D. Ohio (Cleveland),

Doc. C81-882, *National Air Vibrator Co., Inc.* v. *Don B. Lash.*

D. 227,722, Bunk Truck Distributors, COMBINED BED AND STORAGE UNIT, **filed** Feb. 13, 1981, D.C., W.D.N.C. (Asheville), Doc. SH-C-81-47, *Drexel Heritage Furnishings, Inc.* v. *Theodore Shapiro & Michael A. Mendlin doing business as Bunk Trunk Distributors.*

D. 230,476, Delbar Products, Inc., REAR VIEW MIRROR FOR VEHICLES; **D. 230,477,** same, **filed** Apr. 10, 1981, D.C. E.D. Mich. (Detroit), Doc. 81-71134, *Delbar Products, Inc.* v. *K-Mart Corp.*

D. 230,477. **(See D. 230,476.)**

D. 244,462. **(See 3,890,655.)**

Adverse Decisions in Interference

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,767,884, J. M. Osepchuk, J. E. Simpson, ENERGY SEAL FOR HIGH FREQUENCY ENERGY APPARATUS Interference No. 98,951, decided Feb. 4, 1981, claims 13, 14, 16, 17, 19--26, 28–32, 34, 35 and 44.

Patent No. 3,876,587, K. Matsui, M. Kamimura, POWDER COATING COMPOSITIONS, Interference No. 99,694, decided Mar. 3, 1981, claims 1–8.

Patent No. 3,980,791, H. P. Schulz, H. Voege, TETRAMISOLE AND LEVAMISOL POUR-ON ANTHELMINTIC COMPOSITIONS AND METHODS OF USE, Interference No. 99,912, decided Feb. 13, 1981, claims 1–3, 11–13, 21–33, 36–44 and 47.

Patent No. 3,986,423, D. P. Rossum, POLYPHONIC MUSIC SYNTHESIZER, Interference No. 99,905, decided Oct. 27, 1980, claims 1–9, 11–15, 18 and 19.

Patent No. 4,062,993, W. W. Seward, TEXTILE AND METHOD OF MAKING SAME, Interference No. 100,316, decided Feb. 25, 1981, claims 1 and 5.

Patent No. 4,093,405, W. S. Brian, FUEL-OPERATED DEVICE, Interference No. 100,519, decided Apr. 6, 1981, claim 1.

Patent No. 4,136,905, H. R. Morgan, TAILGATE CONSTRUCTION, Interference No., 100,226, decided Apr. 23, 1981, claims 1–4.

Patent No. 4,150,666, D. C. Brush, TUBE HOLDER FOR BLOOD COLLECTION TUBES OF DIFFERENT SIZES, Interference No. 100,455, decided June 22, 1981, claims 4–6 and 8–9.

NANNIE B. HENRY,
Deputy Clerk,
Board of Patent Interferences.

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New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 25, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-29-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	6-25-80
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	7-11-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-03-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-07-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-03-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-31-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	6-08-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	3-28-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	11-01-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	2-06-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	7-30-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during July 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,139,622 to 3,142,840, inclusive

Plant Patents ..... Numbers 2,416 to 2,430, inclusive

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,717

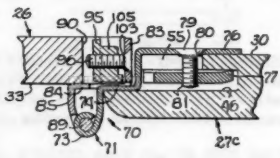
QUICKLY ATTACHABLE AND DETACHABLE HINGE ASSEMBLY

Carl J. Dargene, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Original No. 3,590,419, dated Jul. 6, 1971, Ser. No. 735,127, Jun. 6, 1968. Application for reissue Dec. 13, 1979, Ser. No. 103,515

Int. Cl.³ E05D *5/06*

U.S. Cl. 16—135 **14 Claims**



2. A hinge assembly for use in pivotally connecting first and second relatively swingable members with at least the second member having an edge portion defined in part by a [first] *vertical edge* surface formed with an open-ended slot and by a [generally perpendicular second] *flat vertical face* surface *perpendicular to said edge surface and* having an opening communicating with said slot, said hinge assembly comprising first and second wings swingably connected together with the first wing being mountable on said first member and with the second wing having an opening and being positionable along one side of said [second] *face* surface of said second member with such opening aligned with the opening in the [second] *face* surface, a retainer insertable into said slot from said [first] *edge* surface for placement in the slot along the other side of said [second] *face* surface and being restricted against turning within the slot, and a threaded bolt sized to extend through said openings in said [second] *face* surface and said second wing for interconnecting said second wing and said retainer and for clamping said second wing to said second member, said bolt being releasable to permit removal of said second wing from said second member.

Re. 30,718

SADDLE LOCKUP FOR FLEXIBLE PRINTING PLATE

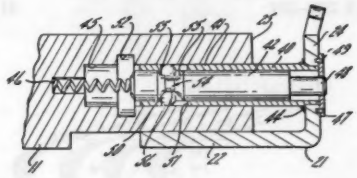
Gordon Etchell, Downers Grove, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Original No. 3,696,744, dated Oct. 10, 1972, Ser. No. 80,426, Oct. 13, 1970. Application for reissue Dec. 14, 1978, Ser. No. 969,312

Int. Cl.³ B41F *27/12*

U.S. Cl. 101—415.1 **15 Claims**

11. A device for mounting a flexible printing plate to a press plate cylinder comprising a curved saddle adapted to be conformably mounted on said cylinder and having the general shape of a sector of a hollow cylinder and having side edges and circumferentially spaced opposite end edges extending radially of said cylinder, means at one end edge of said saddle for securing one end portion of said printing plate, a bar extending along the other end edge of said saddle between said side edges of said saddle and having means for attachment thereto of the other end of said plate, said bar having a portion accessible for manual actuation, combined mounting and locking means positioned between said side edges of said saddle and substantially wholly within said other end edge of said saddle for mounting said bar for movement in a direction substantially circumferentially of said saddle between an inner plate release position adjacent said other end edge of said saddle and an outer plate tensioning position displaced from said other end edge of said saddle and for selectively locking said bar in said plate release position, and spring means carried by said other end edge of said saddle biasing said bar toward said plate tensioning position; said combined mounting and locking means comprising a sleeve rigid with said bar and slidably received in a bore in said other end edge of said saddle and locking means carried by said sleeve effective upon manual displacement of said



bar inwardly to said plate release position for locking said bar in said plate release position, said locking means including a plunger slidably mounted in said sleeve and having an externally manually accessible operating portion extending through said bar, said plunger being effective, upon manual displacement axially inwardly of said sleeve, to release said locking means to permit the bar to be moved outwardly away from said other end edge of said saddle under the influence of said spring means to said plate tensioning position, and means for positively limiting movement of said bar away from said other end edge of said saddle.

Re. 30,719

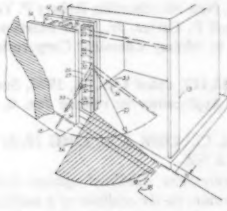
DOORWAY SAFETY DEVICE

Gerald W. Mills, 163 Arch St., Ramsey, N.J. 07446

Original No. 4,029,176, dated Jun. 14, 1977, Ser. No. 619,731, Oct. 6, 1975. Application for reissue Aug. 2, 1978, Ser. No. 930,656

Int. Cl.³ B66B *13/26*

U.S. Cl. 187—52 R **45 Claims**



15. A safety system for preventing the full closure of an automatically operated sliding door, the door being movable from an open position to a closed position against a strike post and having a leading edge, said safety system comprising:

electrical means for sensing and being responsive to objects in a predetermined zone at any position of the door, whereby upon detecting an object in said zone said electrical means generates a signal for preventing further closure of the door, said electrical means comprising:

locating means for locating a leading edge of the door relative to the strike post; and

first transmitting and receiving means positioned at a predetermined angle on the leading edge of the door in cooperation with said locating means for detecting objects in said predetermined zone.

Re. 30,720

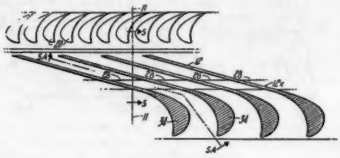
CONTOURED SUPERSONIC NOZZLE

John S. Sohre, 1 Lake View Cir., Beaver Lake, Ware, Mass. 01082

Original No. 3,968,935, dated Jul. 13, 1976, Ser. No. 491,392, Jul. 24, 1974. Continuation-in-part of Ser. No. 362,402, May 21, 1973, abandoned. Application for reissue Jul. 12, 1978, Ser. No. 923,921

Int. Cl.[2] B05B *15/00, 17/00*

U.S. Cl. 239—289 **31 Claims**



1. A convergent-divergent nozzle including:

a pair of opposed spaced apart side walls;

a top wall extending between said side walls; and

a bottom wall spaced from said top wall and extending between said side walls;

said top and bottom walls and said side walls cooperating to define a flow passageway; and

said top and bottom walls being contoured to cooperate with each other to define at least the throat of the nozzle and a divergent section downstream of the throat, said contouring of said top and bottom walls defining a symmetric flow passage therebetween in the direction of flow downstream of said throat.

Re. 30,721

STABILIZED THERMOPLASTIC POLYESTERURETHANES

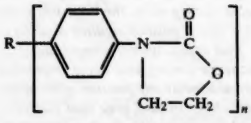
Herbert L. Heiss, New Martinsville; Robert P. Yeater, Moundsville, and Russell P. Carter, Jr., New Martinsville, all of W. Va., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Original No. 4,123,419, dated Oct. 31, 1978, Ser. No. 828,120, Aug. 26, 1977. Application for reissue Jun. 6, 1980, Ser. No. 156,952

Int. Cl.[3] C08K *5/35;* C08G *18/82*

U.S. Cl. 260—45.8 NZ **4 Claims**

10. A polyesterurethane stabilized against hydrolysis and/or processing discoloration by the addition of a stabilizing amount of a 2-oxazolidone-based compound of the formula:



wherein R represents hydrogen or an organic radical which is free of epoxide reactable groups and n represents an integer of from 1 to 3.

Re. 30,722

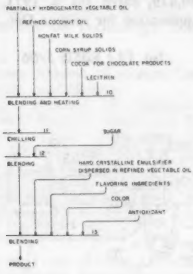
TOPPING FOR FROZEN DESSERTS AND METHOD OF MANUFACTURE

Dale F. Olds, Dublin; Arnold M. Allan, San Francisco, and Charles H. Warren, S. San Francisco, all of Calif., assignors to Patent Technology, Inc., San Francisco, Calif.

Original No. 4,086,370, dated Apr. 25, 1978, Ser. No. 767,291, Feb. 3, 1977. Application for reissue Jan. 2, 1979, Ser. No. 542

Int. Cl.[3] A23G *9/34*

U.S. Cl. 426—613 **13 Claims**



12. An edible coating composition which is a homogeneous blend that is fluid at room temperature and which hardens as a brittle edible shell when applied to a frozen dessert consisting of from 44 to 53% refined edible oil that is substantially entirely liquid at 70° F., from 28 to 38% sugar, from 0 to 9% milk solids, from 4 to 10% corn syrup solids, from 1.8 to 2.4% of a material consisting of crystallized stearine having a melting point of 135°–155° F. and hard crystalline emulsifier selected from the group consisting of monoglycerides, diglycerides and mixtures thereof, from 0.5 to 1.2% moisture, and the remainder flavoring additives.

Re. 30,723

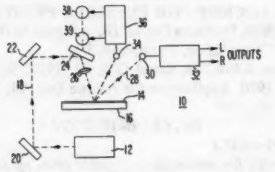
DISC PHONOGRAPH RECORD PLAYBACK BY LASER GENERATED DIFFRACTION PATTERN

William K. Heine, 100 N. Whisman Rd., Apt. 86, Mountain View, Calif. 94043

Original No. 3,992,593, dated Nov. 16, 1976, Ser. No. 499,771, Aug. 22, 1974. Application for reissue Nov. 13, 1978, Ser. No. 960,257

Int. Cl.[2] H04N *5/76;* G11B *7/00*

U.S. Cl. 369—18 **14 Claims**



13. Apparatus for the playback of conventional disc phonograph records comprising a spiral recording groove having intersecting groove walls engraved in the disc surface and where flat land separates adjacent portions of the spiral groove, comprising:

(a) a laser for providing a laser beam of light;

(b) means for rotating a disc phonograph record to be played at the required rotational velocity;

(c) means for directing said laser beam to illuminate the record groove to create an interference-diffraction pattern comprising an arc of light defined by the groove wall which is positionally related to a vector, above and below a middle unmodu-

lated position, and whose maximum-to-minimum positional variation relative to its unmodulated position is proportional to the actual groove wall displacement relative to its unmodulated position and represents the amplitude of the recorded signal, and wherein the rate of change of the positional variation of the arc of light corresponds to the frequency of the recorded signal;

(d) tracking means for maintaining said laser beam directed within the record groove as the disc phonograph record rotates;

(e) means positioned to intercept the interference-diffraction pattern for detecting the positional variations in the interference-diffraction pattern created by the reflected laser beam; and,

(f) means responsive to said detecting means for converting said positional variations of the interference-diffraction pattern into an electrical sound reproduction of the recording.

Re. 30,724

LINE PROTECTOR HAVING ARRESTER AND FAIL-SAFE CIRCUIT BYPASSING THE ARRESTER

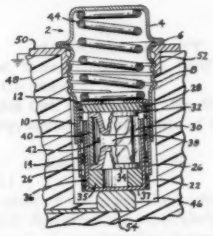
Milton A. Klayum, Itasca, and Richard H. Greischar, Oak Park, both of Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

Original No. 3,755,715, dated Aug. 28, 1973, Ser. No. 296,578, Oct. 11, 1972. Application for reissue Jul. 16, 1979, Ser. No. 58,011

Int. Cl.[3] **H02H** *9/06*

U.S. Cl. 361—124 **16 Claims**

1. A line protector comprising means forming a circuit that comprises in series a fusible solder pellet, spaced electrodes forming an arc gap, first conductor means for connection to a line to be protected, and second conductor means for connection to ground such that an overvoltage surge of short duration at said line will pass current through said series circuit for discharge to ground; said arc gap being sealed in a cold cathode gas tube of which said electrodes form a part; means including said solder pellet normally preventing said first and second conductor means being in contact, and spring means for bringing said first and second conductor means into contact



exteriorly of said tube to bypass said arc gap upon melting of said solder pellet due to an overvoltage surge of longer duration across said series circuit and thereby provide a direct metallic path from said line to ground, *said gas tube having a central axis, means forming a secondary arc gap between said first and second conductor means comprising members that are radially outwardly of said axis, and a perforated insulating member between said members and in close contact with each.*

PLANT PATENTS

GRANTED AUGUST 25, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,760

MINIATURE ROSE PLANT

Verlie W. Wells, Jr., P.O. Box 157, Brighton, Tenn. 18011

Filed Oct. 2, 1979, Ser. No. 81,135

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant which is hardy, dwarf, medium-compact, well-branched and bushy, essentially as illustrated and described, characterized by buds and flowers which are double with from sixty to seventy petals arranged very symmetrically in a full, tightly rolled outwardly form with points at the center and remaining tightly rolled outwardly form with points at the center and remaining tight at maturity, being of medium red on upper edge of inside petal with an inside base of white to creamy white; and further characterized by the plant being hardy, reasonably tall for a miniature, and having good growth habits and disease-resistant foliage.

4,761

EUPHORBIA PLANT

Alfred Stirnadel, Schwarzwaldstr. 80, 6660 Zweibrücken 15, Fed. Rep. of Germany

Filed Oct. 16, 1979, Ser. No. 85,426

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1978, 2845840

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A hybrid plant of the genus Euphorbia, substantially as herein shown and described and particularly characterized in that it is the result of crossbreeding between a plant of the *Euphorbia lophogona* species, as the mother plant, and a plant of the *Euphorbia milii* species, as the father plant, and exhibits the following characteristics: succulent stem with 4 to 5 ridges on which small nodes occur at 2 cm intervals bearing up to 10 red-brown thorns 2 cm in length; blossom clusters up to 15 cm in length form at each new leaf axis and bear up to 32 single blossoms each having two salmon pink to luminous salmon red bracts on light green stalks up to 3 mm in thickness; layered configuration of each blossom cluster whereby, as a rule, two new blossoms develop from each single blossom; the alternately arranged spatulate leaves are slightly pulpy, about 15 cm in length and up to 5 cm in width with a short stalk, said plant being further characterized in that, in the appropriate environment, the plant will bloom uninterruptedly.

PATENTS

GRANTED AUG. 25, 1981

ERRATA

For CLASS	See PATENT NO.
411–508	4,285,103
411–345	4,285,264
411–501	4,285,265
411–190	4,285,377
411–258	4,285,378
411–085	4,285,379
411–103	4,285,380
294–032	4,285,449
369–071	4,285,524
260–809	4,285,530
426–327	4,285,654
126–438	4,285,667
568–422	4,285,811

PATENTS

GRANTED AUGUST 25, 1981

GENERAL AND MECHANICAL

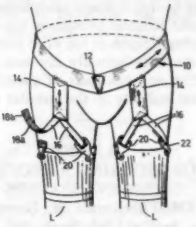
4,285,067
SHOULDER PROTECTOR
Nel E. David, 924 Lincoln Rd., Miami Beach, Fla. 33139
Filed Mar. 7, 1980, Ser. No. 128,097
Int. Cl.[3] A41D *27/12*
U.S. Cl. 2—46 **1 Claim**

1. A shoulder protector for positioning over either shoulder of a person when engaged in holding or burping an infant, said protector comprising an upwardly exposed layer of liquid absorbing material of paper or cloth and an underlying layer of liquid impervious plastic material with the layers being coextensive and defining an elongated flexible member having a shallow concavely curved inner edge adapted to be disposed adjacent the neck region of a person using the protector and an arcuately curved outer edge depending around the juncture between the shoulder and upper arm area of the person using the protector, means at the ends of the protector for securing the ends thereof around the waist region of the person using the protector opposite to the shoulder region engaged by the protector, said plastic material being thermoplastic, said layers being joined together on one or more edges by a continuous laminated heat seam, said arcuate outer edge including end portions arcuately curved at a much smaller radius than the central portion with the end portions terminating in spaced relation to the ends of the protector thereby defining elongated narrow tie straps integral with the ends of the protector and forming a continuation of the inner edge portion of the flexible member, said means securing the protector adjacent the waist region opposite to the shoulder engaged by the protector including a knot securing the ends of the straps together.

4,285,068
CAMOUFLAGE HEADWEAR
Daniel L. Ross, 3370 Highway A, Festus, Mo. 63028
Filed Mar. 6, 1980, Ser. No. 127,975
Int. Cl.[3] A42B *1/04*
U.S. Cl. 2—202 **5 Claims**

1. Camouflage headwear for use while hunting wild game or for use while observing or photographing them, said headwear comprising a mask having a pair of eyeholes and a band for encircling the wearer's head and attaching said mask thereto and for holding the eyeholes in said mask in registry with the wearer's eyes, said eyeholes leaving only the wearer's eyes uncovered whereby the area around the wearer's eyes which is left uncamouflaged is minimized so that game is less likely to perceive the wearer, said mask being a plate preshaped to conform to the wearer's face and fit snugly against his face so that said eyeholes do not interfere with the wearer's peripheral vision, a bag with a rounded bottom formed of netting having patches of preselected colors and having a pair of eyeholes, said bag adapted to fit loosely over the wearer's head and drape down over his neck, and means for attaching said mask on the inside of said bag such that the eyeholes in the mask are aligned with the eyeholes in the bag.

4,285,069
GARTER BELT
Gwendolyn L. Hall, 60 Redcar Ave., Islington, Ontario, Canada (M9B 1K1)
Filed Jun. 6, 1979, Ser. No. 46,035
Int. Cl.[3] A41F *9/00*
U.S. Cl. 2—314 **6 Claims**

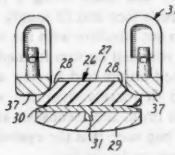


1. Garter belt for athletes, comprising:
a band of material designed to extend about the body of the wearer, above the hips and around the back of the waist and comprising a forward portion and a rearward portion, to be worn, respectively, at the front and rear of the body;
said band having free ends sewn together in overlapping relationship substantially at the centre of the forward portion,
said ends, in said overlapping relationship being sewn so that they define for the band, at such overlap, a shallow upwardly directed V, whereby the forward portion of the band rides lower on the body than the rearward portion,
the material of said band being stretchable in at least the direction extending about the body,
an upper strap attached at its upper end to the forward portion of each band on each side of and spaced from said V, each said upper strap being also spaced from the adjacent rearward portion,
said upper strap being so attached at its upper end to depend downwardly from said band,
two lower straps attached to and depending from the lower end of each upper strap,
means for adjusting the length of each of said lower straps,
a fastener designed to be located at the lower end of the adjusted length of each of said lower straps.

4,285,070
PROSTHETIC DEVICE

Robert G. Averill, Ringwood, N.J., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 912,075, Jun. 5, 1978, abandoned. This application Jun. 18, 1980, Ser. No. 160,612
Int. Cl.³ A61F 1/03
U.S. Cl. 3—1.911 4 Claims

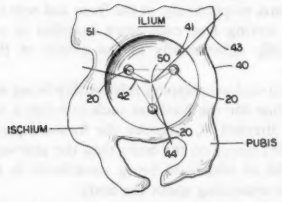


1. A knee joint prosthesis comprising a patella prosthesis for sequential articulation against the condylar surfaces and the surface of the central medially-laterally flat and longitudinally convex groove in an anterior flange bridging said condylar surfaces of a femoral prosthesis having a central opening therein for passage of the cruciate ligaments, said patella prosthesis comprising a substantially flat base, having an outline comprised of two parallel sides and semicircular end portions, one surface of which is adapted for attachment to the resected surface of the natural patella, a bearing insert having a peripheral outline substantially coextensive with said base and having a central laterally extending medially-laterally flat and longitudinally concave ridge portion adapted for sequential tracking within the medially-laterally flat and longitudinally convex groove in the anterior flange of said femoral prosthesis and a pair of shoulders having a shape complementary to the condylar surfaces of said femoral prosthesis for sliding contact with said surfaces during flexion of the knee joint, said central laterally extending medially-laterally flat and longitudinally concave ridge portion and said pair of shoulders thus providing medial and lateral stability to the patellar prosthesis.

4,285,071
METHOD OF SECURING A PROSTHESIS USING CEMENT SPACERS

Carl L. Nelson, 13580 Rivercrest Dr.; Darrel W. Haynes, 11200 Bainbridge Dr., both of Little Rock, Ark. 72212, and Michael J. Weber, 5301 Stonewall Rd., Little Rock, Ark. 72207

Filed Jul. 2, 1979, Ser. No. 54,027
Int. Cl.³ A61F 1/03
U.S. Cl. 3—1.912 5 Claims



1. A method of securing a prosthetic insert to a supporting member, such as a natural bone, wherein the thickness of cement applied between said prosthetic insert and said supporting member is controlled by cement spacers positioned between the supporting member and the prosthetic insert, said method of securing including the following steps:

selecting a plurality of spacers, each of said spacers having a standoff body of substantially the same height and a pointed wire outwardly extending from said standoff body;

positioning each standoff body of said plurality of spacers against said supporting member by fully inserting said pointed wires into said supporting member;

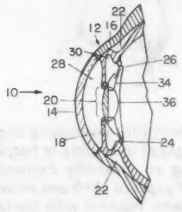
filling the area of separation between said supporting member and said prosthetic insert with bone cement; and

placing said prosthetic insert against the outermost surface of each of said standoff bodies of said inserted spacers.

4,285,072
ANTERIOR-POSTERIOR INTRAOCULAR LENS

Kurt A. Morcher, Stuttgart, Fed. Rep. of Germany; Leo H. Loones, Knokke-Heist, Belgium, and Cornelius D. Binkhorst, Terneuzen, Netherlands, assignors to Harry H. LeVeen, Charleston, S.C.

Filed May 14, 1979, Ser. No. 38,906
Int. Cl.³ A61F 1/16
U.S. Cl. 3—13 17 Claims

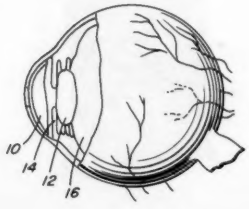


1. An intraocular lens adapted to be implanted in an eye having a posterior capsule comprising an optical lens and support system means connected to said lens, said support system means comprising a plurality of posteriorly projecting members extending from said lens a predetermined distance necessary to extend into the posterior capsule for capsular fixation and a plurality of anterior clips extending posteriorly from the rear surface of said lens and extending outward from said lens a predetermined distance greater than a pupil of the eye as normally constricted but less than the pupil of the eye when substantially fully dilated, said support system being adapted to hold said lens centered on the pupil in the anterior chamber of the eye until natural fixation of said posteriorly projecting members occurs at which time the pupil is dilated and the iris moves away from the anterior members so that said anterior members of said lens are positioned in the posterior chamber of the eye.

4,285,073
KERATOPROSTHETIC POLYURETHANE

Michael Szycher, Lynnfield, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Feb. 11, 1980, Ser. No. 120,345
Int. Cl.³ A61F 1/16, 1/24
U.S. Cl. 3—13 4 Claims



1. An artificial cornea intended for implantation in a human eyeball, said cornea being characterized in that it is formed

from an aliphatic polyurethane elastomer, said polyurethane elastomer being the reaction product of:

(1) hydrogenated methylene diisocyanate;

(2) polytetramethylene ether glycol having a molecular weight between the range of 500–5000; and

(3) ethylene oxide-capped trimethylol propane.

4,285,074

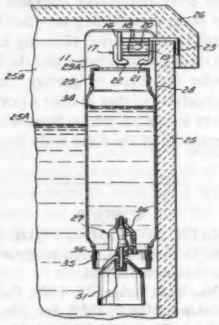
REFILLABLE DISPENSING APPARATUS

W. Stanley Leinberry, Studio City, Calif., assignor to Enjoyable Products, Inc., Los Angeles, Calif.

Filed Dec. 20, 1979, Ser. No. 105,544

Int. Cl.³ E03D *9/03*; G01F *11/32*

U.S. Cl. 4—227 **7 Claims**



1. Apparatus for dispensing liquid in a measured amount into water contained in a toilet tank upon toilet flushing comprising:

a bottle having a first opening at one end thereof and a second opening at the other end thereof;

selectively removable closing means normally closing each opening prior to installation of said bottle in said tank so as to hold liquid in the bottle;

means for mounting said bottle within the tank so that the bottle normally is partially submerged in the tank water with the first opening normally submerged and the second opening above the tank water level;

a valve assembly disposed in said first opening and fixed to said bottle, said valve assembly having

(a) a first member which is fixed to the first opening so as to extend within the bottle, said fixed member having

(i) an inlet disposed within the bottle to provide a passage for the liquid contained in the bottle into a reservoir formed in the fixed member, said reservoir being below the inlet when the bottle is mounted in the tank and

(ii) an outlet formed in the fixed member so as to be below the reservoir when the bottle is mounted in the tank, said inlet, reservoir and outlet being generally axially aligned with one another to provide a passage for the bottle liquid through the fixed member; and

(b) a second member which is movable and is disposed within the fixed member bottle liquid passage;

first valve means formed by said fixed member and said movable member between the reservoir and inlet, said first valve means having a first valve seat formed in the fixed member and a first valve head formed on the movable member so as to seal the bottle liquid passage when seated on the first valve seat;

second valve means formed by said fixed member and said movable member in said bottle liquid passage downstream from the reservoir, said second valve means having a second valve seat formed in the fixed member and a second valve head formed on the movable member and disposed thereon so as to seal the bottle liquid passage when seated on the second valve seat; and in which the first valve means is comprised of a valve seat facing upstream and a valve head facing downstream in the bottle liquid passage and the second valve means is comprised of a valve seat facing downstream and a valve head facing upstream in the bottle liquid passage;

said first and second valve heads being connected together by a valve stem portion of the movable member which extends through the reservoir and being disposed on said stem so as to face in opposite directions relative to one another;

a float mounted on the movable member so as to be disposed external of the fixed member outlet and operable, when the bottle is mounted in the tank so as to be partially submerged and the closing means are removed from the first and second openings, to raise and lower the valve stem portion in response to filling and emptying, respectively, of the tank so that, when said tank is full of water, one of said valve means closes and seals the bottle liquid passage and when the tank is empty, the other said valve means closes and seals the bottle liquid passage;

and in which the inlet has a minimum cross-sectional area open to bottle liquid flow which is less than the minimum cross-sectional area open to bottle liquid flow within the fixed member downstream from the one of said valve means which is closed when the tank is empty whereby, when said closed valve means opens in response to upward movement of float during tank filling, the downward fluid pressure on the valve head thereof rapidly decreases, so that, in response to the upward pressure of the float, the valve stem portion moves upwardly at a much greater rate than the rate of water level rise in the tank, thereby rapidly closing the other of said valve means.

4,285,075

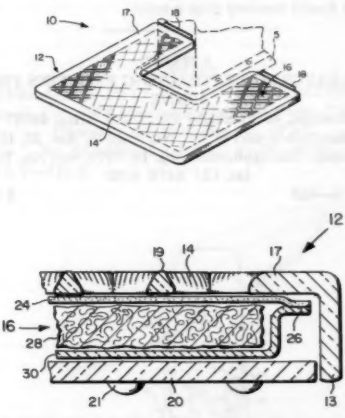
SANITARY COMMODE MAT

Ann J. Nelson, P.O. Box 1107, Daytona Beach, Fla. 32015

Filed Nov. 30, 1979, Ser. No. 99,072

Int. Cl.³ E03D *11/00*

U.S. Cl. 4—252 A **13 Claims**



1. A sanitary commode mat adapted to be placed around the base of a sanitary facility such as a commode or urinal, for collecting and absorbing urine, comprising:

a moisture absorbent pad formed to essentially conform to the base of said sanitary facility for receiving and absorbing urine falling on said mat; and

a cover assembly adapted to contain said pad and having a top surface thereof formed by an open grille work and a bottom surface thereof formed by a solid base, said cover assembly conforming to the shape of said pad, wherein

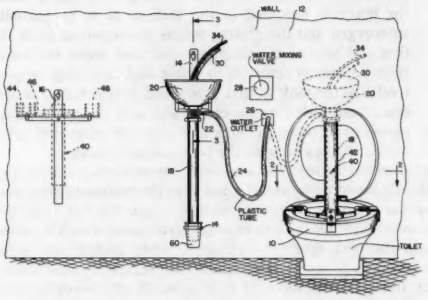
said moisture absorbent pad is disposed between said open grille work and said solid base of said mat cover.

4,285,076

FLUSHING APPARATUS FOR ILEOSTOMY BAG

Samuel R. Dickstein, 705 S. Elk St., Hemet, Calif. 92343

Filed Aug. 1, 1977, Ser. No. 820,427
Int. Cl.³ E03D *11/00*
U.S. Cl. 4—341 **6 Claims**



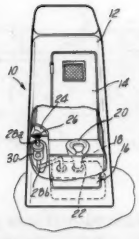
1. Apparatus for flushing the contents of an ileostomy bag into a toilet, said apparatus including in combination: an elongated tubular member; an open-topped funnel member attached to the upper end of said tubular member; first conduit means extending into the funnel member and upwardly through the open top thereof to be inserted into the mouth of an ileostomy bag held over the top of said funnel member; a second conduit means for introducing pressurized liquid from a pressurized liquid source through said first conduit means and into the interior of the ileostomy bag held over said funnel member to flush the contents of the ileostomy bag into the funnel member and through the tubular member; and bracket means for supporting the elongated tubular member and the attached funnel member over a toilet.

4,285,077

APPARATUS FOR EXTRACTING PROTEINS FROM URINE

Earl J. Braxton, 46731 Shelby Rd., Utica, Mich. 48087

Continuation-in-part of Ser. No. 901,248, Apr. 28, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 76,894
Int. Cl.³ A47K *4/00*
U.S. Cl. 4—462 **8 Claims**



1. In a flushless toilet of the type having a urinal, a holding tank containing an odor preventing chemical solution, and a gravity flow conduit connecting the urinal to the holding tank, a filter body containing an adsorbent for at least certain trace constituents of urine removably supported in the conduit intermediate the urinal and the holding tank so that urine flowing from the urinal to the holding tank contacts the adsorbent allowing urine voided into the urinal to pass through the conduit and the filter body to the holding tank under the force of gravity, the urine thereby contacting the adsorbent so that at least a portion of the trace constituents adhere to the adsorbent from which they may be extracted upon removal of the filter body from the toilet.

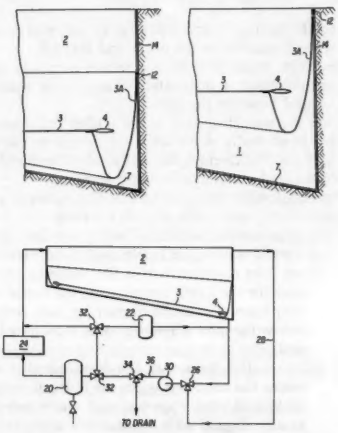
6. A flushless portable toilet incorporating means for extracting commercially useful constituents from the urine voided into the toilet comprising: a unitary enclosed shelter having a door; a urinal supported within said shelter; a holding tank supported in said shelter at a level below the urinal, said holding tank being adapted to retain a deoderizing chemical solution for the urine; a conduit connecting the urinal to the holding tank; container means formed as part of the conduit intermediate the urinal and the holding tank for retaining a filter body; and a filter body removably disposed in the container means, the filter body constituting an adsorbent for at least certain trace constituents of urine allowing urine voided into the urinal to pass through the conduit and the filter body to the holding tank under the force of gravity, the urine thereby contacting the adsorbent so that at least a portion of the trace constituents adhere to the adsorbent from which they may be extracted upon removal of the filter body from said container means.

4,285,078

AUTOMATIC SWIMMING POOL COVER

Roger J. Batstone, Germantown, Md., assignor to French Masterpieces, Inc., Germantown, Md.

Division of Ser. No. 30,915, Apr. 17, 1979, Pat. No. 4,236,258. This application May 7, 1980, Ser. No. 147,387
Int. Cl.³ A47K *3/164*; E04H *3/18, 3/16*
U.S. Cl. 4—661 **2 Claims**



1. A method for containing and controlling the hydrostatic pressure on a liquid storage container having a cover, a membrane connected to a portion of said storage container, and a control member interconnecting said cover and said membrane which comprises:

feeding liquid to and discharging liquid from opposite sides of said cover and membrane which form a liquid storage compartment and a liquid balancing compartment;

pressurizing said control member interconnecting said cover and said membrane so as to control the shape and dimension of said cover; and

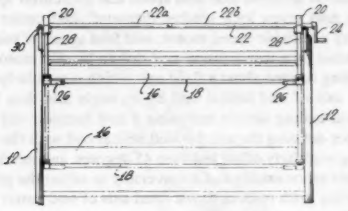
controlling the feeding of liquid to and discharge of liquid from said liquid balancing compartment so as to maintain hydrostatic pressure on said storage container within a predetermined range of values.

4,285,079

APPARATUS FOR RAISING AND LOWERING THE MATTRESS OF A CRIB

Ernest C. Hillman, 1277 S. Adams St., Glendale, Calif. 91205

Filed Jun. 18, 1979, Ser. No. 49,543
Int. Cl.³ A61G 7/00; A47C 31/00; A47D 7/01
U.S. Cl. 5—84 12 Claims



1. An attachment for use with a crib having a main frame including a pair of opposing ends and a pair of sides connecting said ends, a mattress support including a spring frame and a plurality of springs, and a mattress carried by said mattress support, said attachment comprising:

a plurality of brackets in which said spring frame can be received, each of said brackets including a bottom plate and inner and outer walls that define a channel so that it has two sections at right angles, to each other to receive a corner of said spring frame, said inner wall having two separate parts that each terminate at a distance from the intersection of said channel sections, whereby said brackets can accommodate a spring frame having round corners;

a plurality of flexible hoist members for connection to said brackets; and

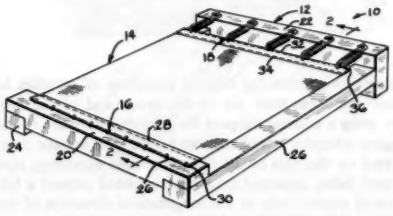
winding means connected to said hoist members for raising and lowering said mattress support.

4,285,080

SPRING DECK FOR SEATING STRUCTURES

John P. Kitchen, Georgetown, and Neville L. Riddle, Lexington, both of Ky., assignors to Hoover Universal, Inc., Saline, Mich.

Filed Nov. 19, 1979, Ser. No. 95,459
Int. Cl.³ A47C 17/13
U.S. Cl. 5—186 R 3 Claims



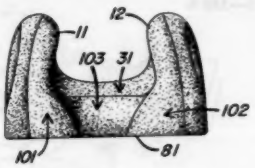
1. A spring deck for supporting padding material in seating structures, said deck comprising an open rigid frame having generally front and rear rails, a sheet substantially covering said frame and having opposite front and rear edges, said sheet being constructed principally of woven, heat treated polypropylene fibers, and first means fixing one edge of said sheet to one rail along the length thereof and second means movably connecting the opposite edge of said sheet to the other rail along the length thereof so as to maintain said sheet in a substantially taut position as it substantially covers said frame.

4,285,081

DEVICE FOR RECUMBENCY OF THE HEAD AND NECK

George W. E. Price, 4 Longfellow Pl., 0608, Boston, Mass. 02114

Filed Oct. 22, 1979, Ser. No. 86,652
Int. Cl.³ A47G 9/00
U.S. Cl. 5—434 9 Claims



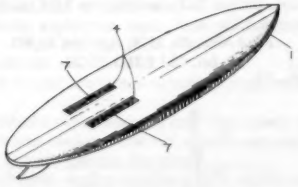
1. A device for recumbency of the head and neck, such device comprising a supporting surface having a generally concave shape with respect to a vertical axis of curvature that corresponds approximately to the central vertebral axis of the neck so that (a) the generally concave shape has left and right halves that are symmetrical about the line of their junction and also so that (b) symmetrically opposed areas in the vicinity of non-adjacent edges of each half exert gentle pressure in the vicinity of the mastoid processes of the head, wherein the surface also has a generally convex shape with respect to a horizontal axis, such axis intersecting the vertical axis of curvature, so that the generally convex shape conforms generally to at least the upper portion of the nape of the neck and the lower portion of the occipital bone of the head.

4,285,082

SURFBOARD SAFETY AND CONTROL ACCESSORY

William G. Cox, 5638 Montezuma Rd., San Diego, Calif. 92115

Filed Aug. 27, 1979, Ser. No. 69,817
Int. Cl.³ A63C 5/00, 9/00, 11/00, 15/00
U.S. Cl. 9—310 E 9 Claims



1. In combination with a water craft, or the like, designed for supporting a rider, a safety device which comprises:

a first element of a releasable fastening means permanently installed on the riding surface of the craft;

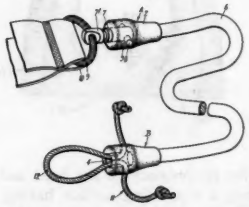
a second element of said releasable fastening means permanently installed on the outside surface of a garment worn by said rider; and

said fastening means comprising cooperating strips of woven fabric having interconnecting surfaces, said first element comprising a mesh made of the same material as the top portion of the craft and including means for fastening said mesh to the undersurface of said strip such that said mesh is imbedded in the top surface of said craft.

4,285,083
LEG ROPE

Jonathan H. Wilson, Flinders, Australia, assignor to Flinders Surfing Co. Pty. Ltd., Flinders, Australia

Filed Dec. 20, 1979, Ser. No. 105,616
Claims priority, application Australia, Jan. 3, 1979, PD7264
Int. Cl.³ A63C 15/05
U.S. Cl. 9—310 E 9 Claims

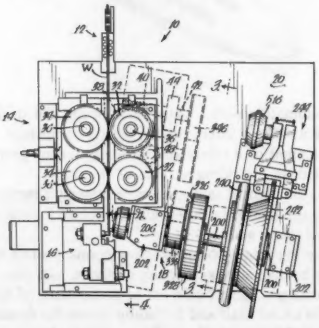


1. A leg rope for connecting a surfboard to a surfer comprising: a flexible cord provided at each end with an end piece, each one said end pieces having a body connected to said cord and provided with an axial inwardly extending opening and a transverse opening passing through said body substantially at right angles to the axial opening and connecting with the axial opening, a swivel having an inner portion accommodated in the axial opening in one of the end pieces and an outer portion projecting beyond the said one of the end pieces whereby the leg rope can be connected to a surfer's ankle band by means of a swivel connection, a pin inserted through the transverse opening in the said one of the end pieces and through a transverse opening in the said inner portion of the swivel in alignment with the said trasverse opening in the said one of the end pieces the thereby retain the swivel in position in the end piece, and connecting means associated with the other end piece to adjustably connect the leg rope to the surfboard, the transverse openings in the end pieces being located beyond the respective ends of the cord, said one of the end pieces being connected to the cord otherwise than by means of the said pin and the said other end piece being connected to the cord otherwise than by means of the said connecting means.

4,285,084
METHOD AND APPARATUS FOR MAKING LOCK WASHERS

Joseph M. Brady, Pennsauken, and Harold S. Peterson, Medford Lakes, both of N.J., assignors to MSL Industries, Inc., Lincolnwood, Ill.

Filed Mar. 23, 1979, Ser. No. 22,958
Int. Cl.³ B21D 53/20
U.S. Cl. 10—73 17 Claims

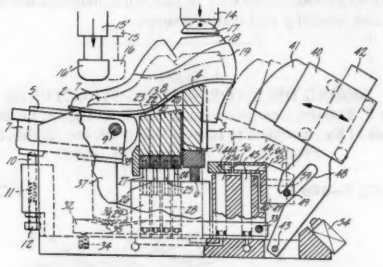


1. A method of producing split ring lock washers from an endless supply of wire which includes continuously feeding said wire towards a coiling device to transform said wire into a helical coil and separating successive end convolutions of said coil by a continuously rotating cutter, the improvement of coordinating the feed speed of said wire with the rotational speed of said cutter for a given lock washer diameter, varying the rotational speed of said cutter while maintaining a synchronized relation between said feed speed and said cutter speed to maintain said given lock washer diameter, said cutter being rotated by a variable speed motor, said feed speed of said wire being varied by a transmission unit driven by said motor, said cutter being rotated about a fixed axis which is angularly offset from an axis of said helical coil by an angle less than 90 degrees, said coiling device including a coil forming roll and a fixed arbor defining the axis for said helical coil with the cutter axis being angularly offset less than 45 degrees, and moving the axis of said arbor axially and transversely to adjust the position of said arbor with respect to the fixed axis of said cutter while maintaining the angular offset.

4,285,085
CEMENTING PRESS

Werner Bergstrasser, Rodermark, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Apr. 10, 1980, Ser. No. 138,760
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1979, 2916308
Int. Cl.³ A43D 63/00
U.S. Cl. 12—16.4 5 Claims



1. A cementing press for cement attaching of outsoles to lasted footwear from their toe to the lower end of the heel breast by using a counter support for applying pressure in the waist region whereby a heel support is arranged to take pressure exerted on the heel breast during cement attaching, said heel support being arranged on a lever pivoted around a fulcrum located transversely to the longitudinal direction of the shoe and the side of the heel, said heel support being further provided with a lifting mechanism for a heel abutment receivable of a catch, said catch being engagable of an inclined slot in said lever so that the lever and the heel support are drawn up against the heel by the lifting motion of the heel abutment, the improvement which comprises;

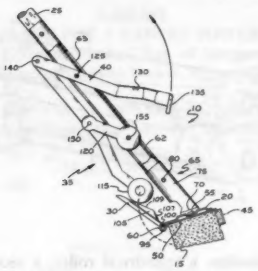
said heel abutment being divided into a front portion facing the waist and rear portion facing the heel support whereby the rear heel abutment portion facilitates the fitting of said catch and the front abutment portion and the rear abutment portion are provided with lifting mechanisms suitable for separate coupling.

4,285,086

SELF-WRINGING MOP

Albert J. Whyte, West Springfield, Mass., assignor to Standex Corporation, Salem, N.H.

Filed Nov. 5, 1979, Ser. No. 91,420
Int. Cl.³ A47L 13/146
U.S. Cl. 15—119 A 12 Claims



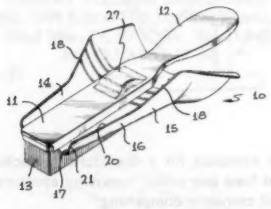
1. Self-wringing mop comprising a compressible mop head fixed on the end of an elongated handle, a pressure plate pivotable into compressive engagement with said mop head, an operating lever pivotally mounted on said handle, a cam arm pivotally attached at an end thereof to said operating lever such that pivoting of said operating lever drives said cam arm toward said mop head, and a roller cam carried by said cam arm and movable reciprocably over a raised follower on the outer surface of said presser plate while pivotally urging said presser plate into compressive engagement with said mop head.

4,285,087

HAIRBRUSH SHIELD

Giuseppe Sapronetti, 12731 Victory Blvd., North Hollywood, Calif. 91606

Filed Jan. 21, 1980, Ser. No. 114,107
Int. Cl.³ A46B 17/00
U.S. Cl. 15—159 R 7 Claims



1. A hairbrush shield comprising:

an elongated hairbrush having a handle at one end and body at the other end incorporating downwardly depending bristles; and

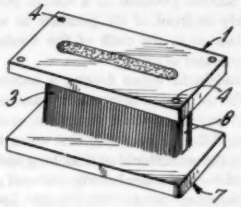
a contained shield outwardly projecting from opposite sides of said body and having a fore-and-aft trough provided immediately adjacent each side of said body so as to develop an upwardly sweep terminating in an outer edge which diverges upwardly and outwardly from the forward end of said hairbrush rearwardly towards said handle.

4,285,088

BRUSH AND PROCESS FOR ITS MANUFACTURE

Jorge V. Ripstein, Av. Cuauhtemoc 60 Desp. 304, Mexico City, Mexico (7)

Filed Dec. 4, 1978, Ser. No. 966,024
Int. Cl.³ A46B 1/00
U.S. Cl. 15—193 9 Claims



1. A process for manufacturing a body of fibers for use in a brush for applying a coating liquid to a surface, which process comprises

(a) inserting lengthwise a plurality of fibers into the elongated opening of a plate such that said fibers are tightly held within said opening,

(b) separating said fibers into a plurality of curtains by inserting separation means into the end of said fibers, said end being opposite from the end which is inserted in said plate, said separation means causing said body of fibers to be separated by at least one space or passage between said curtains of fibers, said separation distance being such that substantial dripping of said coating liquid does not take place,

(c) maintaining said separation means within said fibers while applying to the ends of said fibers which are at the base of said plate means for adhering substantially all of said fibers into a body of fibers,

(d) removing said separation means from said body of fibers, and

(e) removing said body of fibers from said plate, such that said body of fibers contains at least one space or passage between said curtains of fibers.

4,285,089

WINDSHIELD WASHER OF MOTOR VEHICLE

Koichi Takahashi, Yokohama, and Yoshiaki Kato, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 18, 1979, Ser. No. 40,307
Claims priority, application Japan, May 24, 1978, 53-60921
Int. Cl.³ B60S 1/48
U.S. Cl. 15—250.02 11 Claims

1. A system for use in a motor vehicle having a windshield, comprising:

a first windshield wiper having a first wiper blade mounted for oscillation between first and second end positions in first and second opposite directions;

a first windshield washer having a first nozzle which is fluidly connected to an electrically operated first washer pump for ejecting washer liquid through the first nozzle when supplied with electric current;

a first contact base member rotatable in accordance with the oscillation movement of said wiper blade;

a first stationary contact electrically connected to said first washer pump;

first and second movable contacts formed on said first contact base member, each of said movable contacts being contactable with said first stationary contact to supply electric current to said first washer pump through said first stationary contact;

said first movable contact being formed to be contactable with said stationary contact within a first range in which

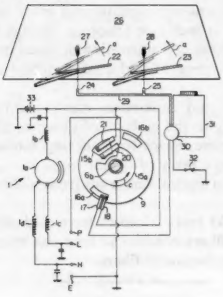
said wiper blade moves in the first direction from the first position to a third position which is immediately in front of the position in which said first wiper blade is in the path of washer liquid being ejected from said first nozzle, and said second movable contact being formed to be contactable with said stationary contact within a second range in which said wiper blade moves in the second direction from the second position to a fourth position which is immediately in front of the position in which said first washer blade is in the path of the washer liquid being ejected from said nozzle;

a second windshield wiper having a second wiper blade mounted for oscillation between first and second positions in first and second opposite directions, said second wiper blade being different from said first wiper blade in wiping range over the windshield and moving speed;

a second windshield washer having a second nozzle which is fluidly connected to an electrically operated second washer pump for ejecting washer liquid through a second nozzle when supplied with electric current;

a second contact base member rotatable with said first contact base member;

a second stationary contact electrically connected to said second washer pump;



third and fourth movable contacts formed on said second contact base member, each of said third and fourth movable contacts being contactable with said second stationary contact to supply electric current to said second washer pump through said stationary contact, said third movable contact being different in size from said first stationary contact, said fourth contact being different in size from said second movable contact;

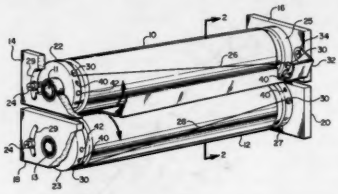
said third movable contact being formed to be contactable with said second stationary contact within a third range in which said second wiper blade moves in the first direction from the first position to a third position which is immediately in front of the position in which said second wiper blade is in the path of washer liquid being ejected from said second nozzle, and said fourth movable contact being formed to be contactable with said second stationary contact within a fourth range in which said second wiper blade moves in the second direction from the second position to a fourth position which is immediately in front of the position in which said second washer blade is in the path of washer liquid being ejected from said second nozzle.

4,285,090

CLEANING DEVICE FOR COLD PRESSURE FUSING ROLLER

Walter J. Jurkowski, Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 21, 1979, Ser. No. 96,702
Int. Cl.³ G03G *21/00*
U.S. Cl. 15—256.51 **10 Claims**



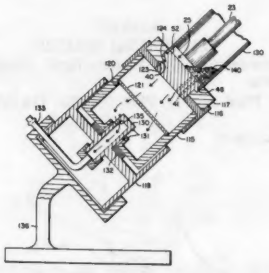
1. In combination, a cylindrical roller, a section of wire helically strung across the cylindrical surface of said roller for removing particles from the cylindrical surface of said roller, and a pair of discs flanking the ends of said roller for providing continuous linear contact between the section of wire and said rollers, said discs having a diameter less than the diameter of said roller, and wherein said section of wire is fixedly secured to the peripheral surfaces of said discs.

4,285,091

DESOLDERING SYSTEM FOR USE WITH A SOLDERING INSTRUMENT

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402

Division of Ser. No. 875,569, Feb. 2, 1978, Pat. No. 4,187,973.
This application Feb. 11, 1980, Ser. No. 120,568
Int. Cl.³ A47L *5/38*
U.S. Cl. 15—310 **3 Claims**



1. A solder extractor for a desoldering attachment of the type having at least one solder removing aperture in a desoldering tip, said extractor comprising:

(a) a base;

(b) a cylinder slidable in said base;

(c) a filter screen disposed in the interior of said cylinder;

(d) said base having a vacuum line extending therethrough having an opening;

(e) said cylinder having a centrally extending boss surrounding said opening of said vacuum line;

(f) means normally sealing said vacuum line against said boss of said cylinder;

(g) detent means between said base and said cylinder for maintaining said cylinder in a position sealing off the opening in said vacuum line;

(h) spring means biasing said cylinder against said base towards said detent means; and

(i) an insert for said cylinder for receiving a particular type of desoldering tip, whereby when said insert is closed by said tip and when said tip is pushed against the spring means, said vacuum line is uncovered, thereby to pull said cylinder inwardly against the action of said spring means.

4,285,092

BOTTOM PLATE FOR A CARPET POWER CLEANER

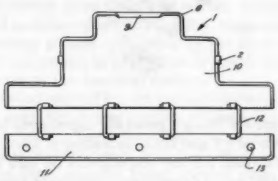
Hans Schmitz, Wuppertal, Fed. Rep. of Germany, assignor to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Oct. 17, 1979, Ser. No. 85,514

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 7831493[U]

Int. Cl.³ A47L 9/06

U.S. Cl. 15—378 **9 Claims**



9. A carpet power cleaner, comprising a housing; a brush arranged in the housing; and bottom plate having a body part including two portions which are spaced from one another, one of said portions being attached to said housing, whereas the other of said portions is provided with a detent which is detachably engageable in said housing, said body part also including a plurality of transverse bar members extending between and connecting said two portions of said body part with one another and guiding the brush, said transverse members being pivotally connected to said body part, so that said other portion of said body part after being disengaged from said housing can be turned together with said transverse member relative to said one portion of said body part to allow removal of said brush without detachement of said one portion and thereby without detachment of the whole body part from said housing.

4,285,093

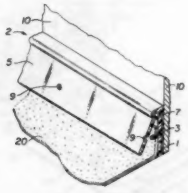
CARPET HOLDER BASEBOARD

Jane I. Kundin, 1288 Laurel Hill Dr., San Mateo, Calif. 94402

Filed Mar. 19, 1979, Ser. No. 21,849

Int. Cl.³ A47G 27/04

U.S. Cl. 16—17 **6 Claims**



1. A fabric fastener for securing a piece of fabric about an area of a room comprising:

a fixed support member to be attached to an area of the wall;

a freely detachable arm hingedly connected to the upper portion of said fixed support member;

means extending outwardly through the surface of said fixed support member for securely connecting said freely detachable arm of said fastener to said fixed support member to securely position said detachable arm longitudinally adjacent the front surface of said fixed support member

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4,285,094

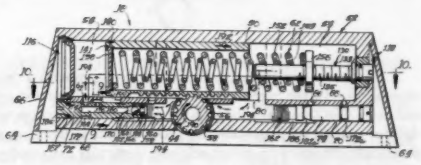
DOOR CLOSING APPARATUS

Nelson Levings, Jr., 8101 Willow Dr., Palos Hills, Ill. 60465

Filed Aug. 11, 1978, Ser. No. 932,773

Int. Cl.³ E05F 3/10

U.S. Cl. 16—52 **13 Claims**



13. A door closing apparatus comprising in combination: a housing comprising a casting member having a cylinder cored therein and a bore cored therethrough substantially perpendicular with said cylinder and intersecting said cylinder over a predetermined fractional portion of the volume thereof, a cylindrical piston mounted for reciprocal motion in said cylinder, a pinion rotatably mounted in said bore, cooperating teeth on said piston and said pinion engaged through said intersecting portions of said bore and cylinder for effecting reciprocation and rotation of said piston and pinion in unison, a bushing member interposed between said pinion and said bore and having a window disposed for permitting said engagement between said cooperating teeth, linkage means for joining said door closing apparatus between a door and a door frame and including first and second elongate arm members, said first arm member having driveshaft engaging said pinion and said second arm member having first and second ends, means in said first end defining substantially a ball joint for pivotally engaging an end of said first arm member opposite said drive shaft means, means defining a second ball joint in said second end for pivotal engagement with a mounting bracket to complete said joining between said door and door frame, means defining a closed end of said piston for dividing said cylinder into portions of varying volume in accordance with the reciprocation of said piston, and biasing means for urging said piston in a predetermined direction and comprising a pair of coaxially disposed compression spring members disposed in said cylinder and an axially movable stop member abutting one end of said pair of spring members, an opposite end of said pair of spring members abutting said closed end of said piston, said stop member effecting a desired amount of compression of first and second spring members in accordance with the axial position thereof, said housing being adapted for retaining a predetermined amount of fluid such as hydraulic oil therein, said door closing apparatus further including fluid flow control means comprising a plurality of port means and channel means in said housing, and valve means cooperating with said port means and channel means for selectively controlling fluid flow between opposite sides of said piston in response to opening and closing of said door, respectively.

4,285,095

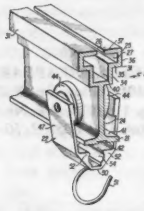
CHANNEL STRUT FOR STAGE EQUIPMENT SUPPORT SYSTEM

Richard W. Janson, Box 6090, Canton, Ohio 44706

Continuation-in-part of Ser. No. 855;256, Nov. 28, 1977, Pat. No. 4,166,306, which is a continuation of Ser. No. 734,106, Oct. 20, 1976, which is a division of Ser. No. 617,508, Sep. 29, 1975, Pat. No. 4,014,071. This application Aug. 31, 1979, Ser. No. 71,586

Int. Cl.[3] A47M *15/00*

U.S. Cl. 16—94 R 10 Claims



1. A traverse rod support strut in combination with a support member, said strut comprising an upper support portion which defines a cruciform-shaped groove and a lower portion which defines a like cruciform-shaped groove, said strut being symmetrically disposed on either side of a vertically disposed plane parallel to its length and of a horizontally disposed plane parallel to its length and having a substantially uniform cross-section within a further vertical plane perpendicular to the first-mentioned plane, said support member comprising a cruciform-shaped part adapted to mate with and be slidably received in either said groove and a connection part integral with and extending from said cruciform-shaped part parallel to said horizontally disposed plane and closely adjacent the outer surface of said support portion in which it is received, a ceiling above said strut, hanger means depending from said ceiling received by said support member providing support for said strut.

4,285,096

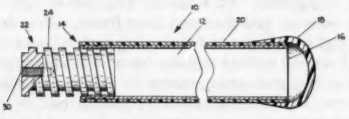
INDESTRUCTIBLE HANDLE FOR MOP OR BROOM AND METHOD OF MAKING SAME

Martin H. Swaim, Wyoming, Mich., assignor to Theron A. Van Putten, Grand Rapids, Mich.

Filed Oct. 2, 1978, Ser. No. 947,617

Int. Cl.[3] A47B *95/02*

U.S. Cl. 16—114 R 9 Claims



1. A durable handle for a push broom or mop or the like comprising:

an elongated tubular handle member formed of weldable metal having an open outer end; and

a cylindrical plug formed of weldable metal mounted rigidly in the open outer end of the handle member, the metal plug including external threads that are shaped so as to fit the internal threads of a standard push broom head, the metal plug further having a threaded internal opening in the outer end thereof such that the internally threaded opening fits an externally threaded mounting stud on a standard mop head, the plug being spot welded in the end of the tube.

4,285,097

STRUCTURE FOR FIXING A KNOB TO A PART TO BE OPERATED THROUGH THE KNOB

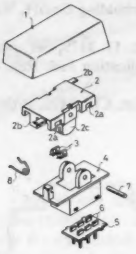
Shiro Kondo, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 877,092, Feb. 13, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,678

Claims priority, application Japan, Feb. 15, 1977, 52/17075

Int. Cl.[3] E05B *1/00*

U.S. Cl. 16—121 2 Claims



1. In a structure for fixing a generally cap-shaped knob over a part to be operated by said knob, including at least one set of co-engaging structures formed respectively on said knob and said part, each said set of co-engaging structures being constituted by a concavity and a corresponding convexity formed on the inner surface of said knob and a facing outer surface of said part, respectively, at locations thereon spaced downwardly from the upper surface thereof, the improvement comprising two elastic tabs respectively extending oppositely from opposing outer surfaces of said part, said tabs each extending to a height slightly above the upper surface of said part and extending to the inner surface of said knob whereby said knob can be fitted over said part with said co-engaging structures properly aligned by said tabs engaging said inner surfaces of said knob and, when said structures are co-engaged, said tabs will urge said structures into firm engagement.

4,285,098

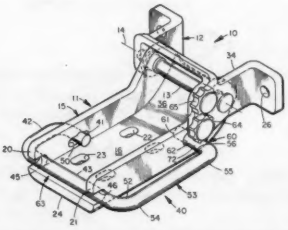
DOOR HINGE HAVING TORSION BAR HOLD-OPEN STRUCTURE

Ralph R. Hicks, Grand Prairie, and Guadalupe J. Martinez, Fort Worth, both of Tex., assignors to Vought Corporation, Dallas, Tex.

Filed Apr. 30, 1979, Ser. No. 34,873

Int. Cl.[3] E05D *11/10*

U.S. Cl. 16—145 20 Claims



1. A door hinge and check structure, comprising:

first and second hinge members;

means interconnecting the members for permitting mutual pivotal movement of the members about a hinge axis, the first hinge member being adapted to be secured to a sup-

porting structure, the second hinge member being adapted to be secured to a door which is swingable about the hinge axis relative to the supporting structure;

a torsion bar structure including an elongated torsional section having first and second end portions;

means anchoring the first end portion of the torsional section to the first hinge member at a portion of the first hinge member spaced from the hinge axis;

the torsion bar structure further comprising a lever arm extending from the second end portion of the torsional section and laterally of the torsional section toward a portion of the first hinge member spaced along the first hinge member from the anchoring means in a direction toward the hinge axis, the lever arm having a distal end portion and having a detent portion spaced between the lever arm distal end portion and the second end portion of the torsional section;

the first hinge member further having means for receiving said lever arm distal end portion, for preventing substantial lateral displacement of the distal end portion of the lever arm and constraining the lever arm against lateral displacement at its distal end portion beyond a predetermined position relative to the first hinge member, and for permitting pivotal movement of the lever arm about its distal end portion in a direction in which torsional stress is imparted to the torsional section;

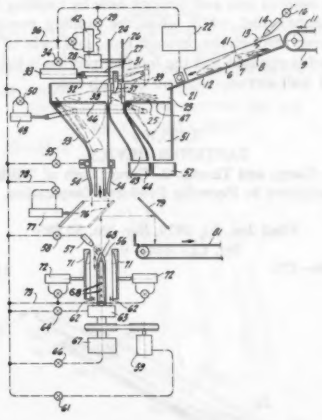
striker means carried by the second hinge member in alignment with the detent portion of the lever arm and at a radial distance from the hinge axis at which the striker means is in engagement with said detent portion upon the second hinge member being pivoted upon the hinge axis through a predetermined positional range relative to the first hinge member.

4,285,099

SQUID PROCESSING MACHINE

Rajinder P. Singh, and Daniel E. Brown, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 10, 1979, Ser. No. 65,538
Int. Cl.³ A22C *25/14*
U.S. Cl. 17—53 **18 Claims**



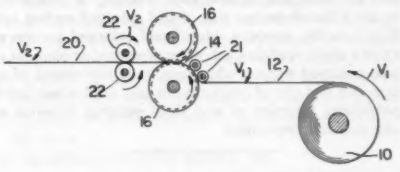
1. A squid processing machine for a squid having a body with an intermediate eye portion, an end tentacle portion and an end envelope portion having a skin with a circumferential rim comprising a frame; a substantially horizontal alignment trough on said frame and having a movable side wall; a feeding table on said frame directing a squid thereon into said alignment trough; means on said frame for engaging said circumferential rim on a squid in said alignment trough and moving said squid rim into a predetermined longitudinal position in said trough; a pair of knives on said frame movable across said trough on opposite sides of said predetermined longitudinal position to sever a squid therein into a separate intermediate eye portion, an end tentacle portion and an end envelope portion; means for moving said side wall to release said separate squid portions from said trough; means for conducting said eye portion from said trough; means for conducting said tentacle portion from said trough; a hollow peg; means for mounting said peg on said frame for rotation about an upright axis; means for directing said end envelope portion from said alignment trough into a substantially upright position with the severed end thereof down and in alignment with said peg; means for urging said substantially upright end envelope portion into impalement on said peg; means for rotating said peg and said end envelope portion therewith; means for projecting a water jet against said rotating end envelope portion to remove said skin therefrom; means for discharging said skinless end envelope portion from impalement on said peg.

4,285,100

APPARATUS FOR STRETCHING A NON-WOVEN WEB OR AN ORIENTABLE POLYMERIC MATERIAL

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Biax Fiberfilm Corporation, Neenah, Wis.

Division of Ser. No. 900,720, Apr. 27, 1978, Pat. No. 4,223,059, which is a continuation of Ser. No. 563,623, Mar. 31, 1975, abandoned. This application Jan. 11, 1980, Ser. No. 111,365
Int. Cl.³ B29D *7/24*
U.S. Cl. 19—161.1 **4 Claims**



1. An apparatus for bi-axially stretching a non-woven web of orientable polymeric material which comprises:

(a) a first station means for stretching said web in a first direction and including a first set of interdigitating rollers formed with grooves having a distance therebetween of less than one millimeter times the web basis weight in grams per square meter, said first set of interdigitating rollers stretching incremental portions of said web in a first direction;

(b) first regulator means for controllably introducing said web into said first set of interdigitating rollers;

(c) a first take-up means for elongating said web in said first direction upon withdrawal of said web from said first set of interdigitating rollers;

(d) a second station means for stretching said web in a second direction and including a second set of interdigitating rollers formed with grooves having a distance therebetween of less than one millimeter times the web basis weight in grams per square meter, said second set of interdigitating rollers stretching incremental portions of said web in a second direction;

(e) a second regulator means for controllably introducing said web into said second set of interdigitating rollers;

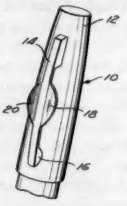
(f) a second take-up means for elongating said web in said second direction upon withdrawal of said web from said second set of interdigitating rollers; and

collecting means for receiving said web of bi-axially orientated material.

4,285,101
ELONGATED IMPLEMENT CLIP

Arthur W. Hanna, 9706 Wheatland Ave., Sunland, Calif. 91040

Filed Mar. 21, 1980, Ser. No. 132,676
Int. Cl.³ A44B *21/00*; A45F *5/02*; B43K *25/00*
U.S. Cl. 24—3 L **2 Claims**



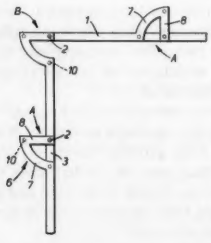
1. In combination with an elongated implement, said implement having a clip one end of which is attached to said implement and an opposite end being detached from said implement, said opposite end being continuously biased into contact with said implement, said clip having a narrow elongated body, said body to be capable of being manually grasped and said opposite end moved out of contact with said implement permitting a section of sheet material to be located between said implement and said body, the improvement comprising:

means connected to said clip facilitating one handed movement of said opposite end, said means comprising an enlarged section attached to said body, said enlarged section substantially increasing the width of said body, said enlarged section being located intermediate said one end and said opposite end of said clip, whereby a person is to locate a thumb on one side of said enlarged section and a finger on the opposite side of said enlarged section and exert a slight wedging action between said implement and said enlarged section which results in movement of said opposite end out of contact with said implement thereby permitting insertion of said sheet material between said clip and said implement.

4,285,102
DOCUMENT CLAMPING DEVICES

Raymond K. Jansen, 10, Dylan Close, Llandough, Penarth, Glamorgan, Wales

Filed Mar. 8, 1979, Ser. No. 18,791
Claims priority, application United Kingdom, Mar. 11, 1978, 9706/78
Int. Cl.³ B65D *67/02*
U.S. Cl. 24—17 R **7 Claims**

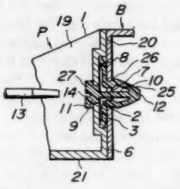


1. A document clamping device comprising a series of generally elongate links pivotally interconnected so that each adjacent pair of links is movable between a first position where they at least approach mutual alignment and a second position where they are substantially at right angles to one another, first locking means effective to hold the links in the first position, second locking means effective to hold the links in the second position, and an arcuate portion carried by one of the links, the centre of radius of the arcuate portion being at the pivot point of the link, end portions of the arcuate portions carrying separate parts of the respective first and second locking means for holding the links in the respective first and second positions.

4,285,103
ELEMENT MOUNTING STRUCTURE

Hiroshi Inamoto, Yokohama, Japan, assignor to Kato Hatsujo Kaisha, Ltd. and Nissan Motor Co., Ltd., both of Yokohama, Japan

Filed Jan. 15, 1980, Ser. No. 112,282
Claims priority, application Japan, Jan. 17, 1979, 54-2911
Int. Cl.³ F16L *33/12*; F16B *19/00*
U.S. Cl. 411—508 **5 Claims**

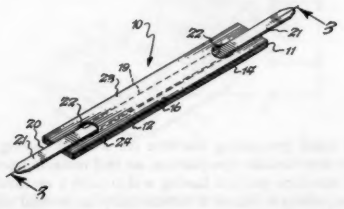


1. An element mounting structure comprising a body, and an element mounted onto the body, one of the body and the element having a through hole with a guide means; a mounting hole provided on the other one of the body and the element; and a clip having a resilient connecting rod, a holding portion formed at one end of the resilient connecting rod, an engaging portion formed at the opposite end of the connecting rod so as to be fitted in said mounting hole, and base plate means formed of an extension of said engaging portion to an intermediate portion of said connecting rod so as to clip peripheral wall surrounding said through hole by cooperation of said base plate means and said holding portion, whereby as the holding portion is inserted into said through hole by twisting the resilient connecting rod, while when the holding portion completely passes through the through hole, said twist of the connecting rod is released and the holding portion is held by the peripheral wall surrounding said through hole.

4,285,104
FASTENER DEVICE

Joseph T. Corey, and Thomas J. Corey, both of Williamsville, N.Y., assignors to Permclip Products Corporation, Buffalo, N.Y.

Filed Jun. 21, 1979, Ser. No. 50,889
Int. Cl.³ A44B *9/00*
U.S. Cl. 24—153 **11 Claims**



1. A fastener device for holding papers on the leaf of a file folder comprising base means for attachment to the leaf of a file folder and having an upper side and a lower side, a prong

member having a central portion and outer end portions on which said papers are mounted and demounted, securing means on said upper side for securing said central portion to said base means, and pressure-sensitive adhesive on said lower side for securing said base means to said leaf of said file folder, said base means being flexible and resilient so as to be capable of being stretched by forces applied to said prong member during mounting and demounting of said papers to thereby absorb said forces while retaining adhesive engagement with said leaf to tend to prevent said base means from being pulled away from said leaf.

4,285,105

COLORED INTERLOCKING CLOSURE STRIPS

George F. Kirkpatrick, Downers Grove, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 947,040, Sep. 29, 1978. This application Sep. 4, 1979, Ser. No. 72,287

Int. Cl.³ B65D *17/20*

U.S. Cl. 24—201 C **11 Claims**

1. An interlocking closure device comprising two closure profiles operable for being interlocked continuously over a predetermined length, wherein the improvement comprises each of said closure profiles being completely colored in different colors, said closure profiles being interlocking so as to visually contrast said closure profiles relative to one another when occluded without visual disappearance of either closure profile color, whereby the position of the closure profiles on a container can be easily identified visually to simplify the closing and opening of the container.

4,285,106

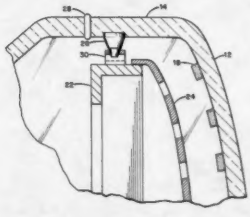
METHOD FOR PRODUCING COLOR CATHODE RAY TUBE APERTURE MASKS

Ralph P. I. Adler, Wellesley, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 13, 1979, Ser. No. 103,311

Int. Cl.³ H01J *29/07*

U.S. Cl. 29—25.15 **5 Claims**



1. In a process for fabricating an aperture mask assembly for a color cathode ray tube including the steps of:
   (a) attaching bimetallic mounting members to the periphery of the metal frame of said aperture mask assembly;
   (b) attaching a pre-formed aperture mask to said metal frame; and
   (c) forming a protective oxide coating on said bimetallic mounting members, frame, and mask;

the improvement comprising the step of mechanically roughening the surface of said bimetallic mounting members prior to the step of forming said protective oxide coating therein whereby said oxide coating is adherent to said surface.

4,285,107

COOLABLE ROLLER

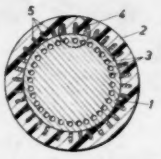
Eduard Küsters, Gustav-Flinders-Weg 18, 4150 Krefeld, Fed. Rep. of Germany; Werner Hartmann, Krefeld, Fed. Rep. of Germany, and Valentin Appenzeller, Kempen, Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,188

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1977, 2756745

Int. Cl.³ B21B *31/08*

U.S. Cl. 29—129.5 **5 Claims**



1. A method for fabricating a coolable roller having an inner supporting cylinder which consists of metal on which a tubular roller jacket is firmly disposed, the roller jacket consisting of plastic and having slots on its inner circumference, the inner cylinder including means for cooling and a pressure resistant heat conductor which is in heat conducting contact with the walls of the slots being disposed in said slots comprising:
   (a) constructing the roller jacket separately from the inner cylinder, the roller jacket being constructed with slots;
   (b) heating the roller jacket and cooling the inner cylinder with the roller jacket disposed over the inner cylinder;
   (c) placing metal powder which is in a cooled condition into the slots;
   (d) densifying said metal powder; and
   (e) permitting the temperature of the jacket and inner cylinder to equalize.

4,285,108

APPARATUS AND METHOD FOR REFINISHING TURBINE BLADE AIRSEALS

John P. Arrigoni, Wallingford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 23, 1979, Ser. No. 14,781

Int. Cl.³ B23P *15/04, 6/00*; B24B *21/14, 21/16*

U.S. Cl. 29—156.8 B **6 Claims**

1. The method of repairing and restoring a gas turbine airfoil component having a circumferential airseal at its top shroud, comprising:
   (a) grinding the airseal portion of the component to produce an airseal stub having a substantially planar surface;
   (b) providing a piece of metal having a surface which is capable of faying with the airseal stub surface and the length of which is at least equal to the length L of the surface of the airseal stub;
   (c) aligning the surfaces of the piece and the airseal stub so they fay with their lengths aligned;
   (d) metallurgically joining the piece to the airseal stub to create an airseal weldment having a length L;
   (e) providing a grinding surface having a fixed contour, the contour being substantially that circumferential radius contour required on the airseal of a restored airfoil;
   (f) grinding the airseal weldment at the free outer surface opposite the joined faying surface by moving the component toward the contoured grinding surface so the grind-

ing motion at the point of contact with the said free outer surface is substantially perpendicular to the airseal weldment length L;

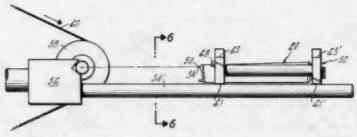
(g) positively producing the desired airseal contour and height H irrespective of time or rate of engagement with the grinding surface by moving the airfoil toward the grinding surface to a stop position; and

(h) removing any other surplus airseal weldment material by grinding and polishing to finish the airseal restoration.

5. Apparatus for grinding the finished circumferential contour of a first airseal and a second airseal of a gas turbine airfoil component, the airseals having different design radii, comprising:

(a) a movable abrasive belt having, in a plane perpendicular to the belt travel direction, a contact surface contour formed on a contact roller, for grinding airseals;

(b) means for supporting a grinding fixture, mounted in proximity to the abrasive belt;



(c) a grinding fixture movably mounted on the supporting means, the fixture adapted to hold a component in a manner which enables grinding of the airseals by the moving abrasive belt on the contact roller, the fixture having two positions with respect to the said contact roller, a first position such that the location of the length of a first airseal of the component holdable in the fixture is parallel with the centerline of the roller and the location of the first airseal height lies within a plane taken through a diameter of the roller, and a sequential second position wherein the location of the second airseal of the component is disposed similarly to that described for the first, so that the grinding motion of the belt at the point of contact with the airseals is substantially perpendicular to the airseal lengths; and

(d) means for guiding the grinding fixture toward the abrasive belt to predetermined stop positions, to remove surplus material and form the airseals to a finish contour.

4,285,109

METHOD OF HYDRODYNAMIC FORMING

Ronald E. Kautzer, Malone, and Donald M. Mueller, Fond du Lac, both of Wis., assignors to D. Mueller Welding, Inc., Oakfield, Wis.

Filed Apr. 5, 1976, Ser. No. 683,502
Int. Cl.³ B23P *15/00*
U.S. Cl. 29—157 R **8 Claims**

1. A method of producing a hollow three-dimensional article having ends from flat ductile material comprising the steps of:

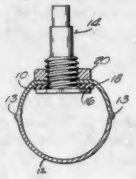
(A) Forming two blanks from said flat ductile material;

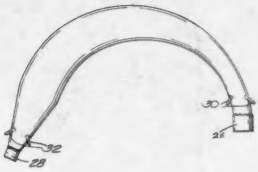
(B) Forming fluid passage means in one of the blanks;

(C) Joining the blanks together face to face along a continuous joining line which forms a closed annular curve that encloses the fluid passage means;

(D) Introducing a fluid under pressure into the fluid passage means without any enclosing shape forming means, and

(E) Removing the fluid from the interior of the resulting hollow three dimensional article; and





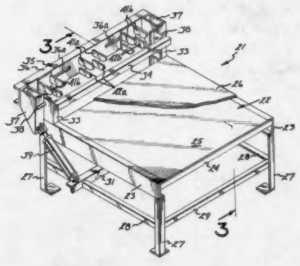
characterized by the step of terminating the input of fluid when a predetermined pressure is reached, and further including the steps of (F) removing both ends of said article; and (G) attaching a collar to the portion of said article adjacent to each cut-off end.

4,285,110

PALLET DISASSEMBLING DEVICE

Raymond C. Fagre, Jr., Minneapolis, Minn., assignor to Pallet Service Corporation, Minneapolis, Minn.

Filed May 29, 1979, Ser. No. 43,507
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—252 **27 Claims**



1. Apparatus for disassembling a wooden pallet having a plurality of longitudinal stringers and a plurality of transversely secured slats defining top and bottom planar support surfaces, the apparatus comprising:

(a) a table defining a support surface for a pallet;

(b) slat removing means comprising

(i) frame means carried by the table about a predetermined fixed axis of rotation and pivotally movable through approximately 90° from a first position to a second position;

(ii) means carried by the frame means defining a slot corre-

sponding generally in size to one of the slats of the pallet;

(iii) the slot being disposed in general alignment with the support surface with the frame means in said first position so that it receives one of the end slots of the pallet;

(iv) the slot defining means being constructed to remove the slot from the stringers when the frame means moves from the first position to the second position;

(c) actuating means for moving the frame means between the first and second positions;

(d) and means for retaining the pallet as the frame means is moved by the actuating means from the first position to the second position.

4,285,111

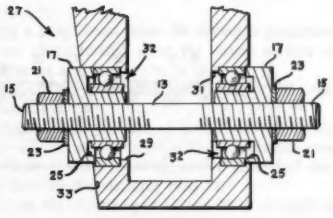
BEARING PULLER ALIGNMENT TOOL

Harry Dubach, 314 N. 700 E., Kaysville, Utah 84037

Filed Jun. 26, 1980, Ser. No. 163,136

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—263 **1 Claim**



1. A bearing puller alignment tool for installing ball bearings in an aircraft part having one opening in an angularly oriented wall surface, said tool comprising a shaft with threads on each end thereof, a pair of flanges slidable along said shaft, a lip disposed on the inner face of each of said flanges at its outer circumference to cause pressure to be applied only to the outer ring of the ball bearings when the bearings are pulled into position, a thrust washer positioned on each end of said shaft adjacent the outer faces of said flanges to minimize the effect of friction when the bearings are pulled into position, a collar on the inner face of each of said flanges for holding said bearing, the inside diameter of said bearings fitting over the outside diameter of said collars, and a nut on each end of said shaft in engagement with the threads thereon whereby the tightening of said nuts produces a corresponding inward movement of said flanges and bearings causing said bearings to be pulled into position in the aircraft part along a straight line regardless of the angularly oriented wall in the aircraft part.

4,285,112

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,353

Int. Cl.³ B23P *19/06*

U.S. Cl. 29—407 **10 Claims**

1. A method of tightening a joint including at least a pair of parts and at least one threaded fastener for clamping the parts together, comprising

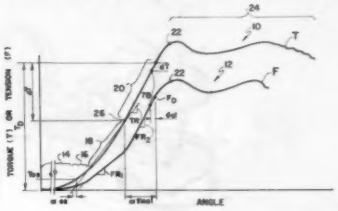
applying torque to the fastener and threadably advancing the same;

sensing the torque applied to the fastener and the angle of threading advance;

monitoring a condition of the joint including

determining a rejection parameter from the torque and angle sensings in a time frame commencing with the onset of threading advance of a particular fastener and ending with the termination of tightening of the particular fastener;

finally terminating tightening of the fastener in response to a tightening parameter in a region of fastener stress; and



rejecting and finally terminating tightening of the fastener prior to the attainment of the tightening parameter in response to the rejection parameter.

4,285,113

METHOD OF FORMING BRASSIERE WIRES

Ross F. Rowell, 5361 Belmore, Montreal, Quebec, Canada

Division of Ser. No. 897,850, Apr. 19, 1978, Pat. No. 4,201,220. This application Oct. 29, 1979, Ser. No. 89,091

Int. Cl.³ B23P *17/00*; B22D *11/126*; A41C *1/14*

U.S. Cl. 29—413 **7 Claims**

1. A method of forming a flexible end in a wire member for use in a garment, the method comprising the steps of supplying an elongated wire member, forming a line of weakening proximate one end of said member, forming a sheath of a flexible material about said one end, and breaking said end of said wire member at said line of weakening.

4,285,114

METHOD FOR TRANSFERRING CIRCULAR PAPER FILTERS FROM A STACK OF SUCH FILTERS INTO A COFFEE MAKER BASKET

Alfred J. Underdahl, 402 Pleasant Dr., Hastings, Minn. 55033

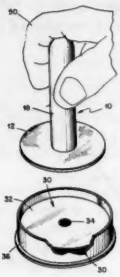
Filed Nov. 15, 1979, Ser. No. 94,447

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—451 **3 Claims**

1. A method of transferring circular coffee maker filters of fibrous material from a stack of such filters into a coffee maker basket comprising the steps of rotatively oscillating a dielectric

disc against the uppermost filter of said stack to induce electrostatic charges on said filter to cause said filter to cling to said



disc, and inserting said disc into the basket with said filter attracted thereto to deposit said filter in said basket.

4,285,115

METHOD OF MANUFACTURING RAILWAY SLEEPERS

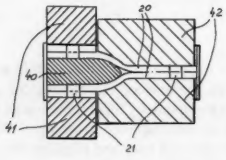
Jürgen Frenzel, Freden, Fed. Rep. of Germany, assignor to ARBED, Luxembourg, Luxembourg

Continuation-in-part of Ser. No. 870,883, Jan. 20, 1978, abandoned. This application Jun. 1, 1979, Ser. No. 44,476

Claims priority, application Austria, Jan. 20, 1977, 321/77; Fed. Rep. of Germany, Nov. 18, 1977, 2751531

Int. Cl.³ B23P *3/00, 19/04*

U.S. Cl. 29—460 **3 Claims**



1. A method of forming a railway sleeper comprising the steps of:

rolling a pair of steel profiles in the form of I-beams having upper and lower flanges and webs connecting said flanges;

heating said I-beams;

placing said I-beams in spaced-apart parallel positions so that said profiles have corresponding flanges in coplanar relationship and oppositely juxtaposed end portions in mutually parallel relationship;

pressing corresponding end portions together in a heated condition thereof to permanently deform the end portions which are pressed together, thereby causing flanges of the I-beams to abut, while maintaining the separation of the other two end portions of said profiles; and

welding the end portions which have been pressed together to one another along the abutting flanges at least in part by welding a plate to two abutting flanges of the pressed-together end portions.

4,285,116

METHOD OF MANUFACTURING HIGH VOLTAGE MIS TYPE SEMICONDUCTOR DEVICE

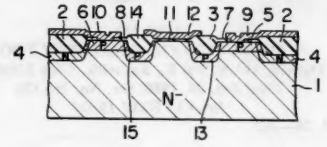
Satoshi Meguro, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

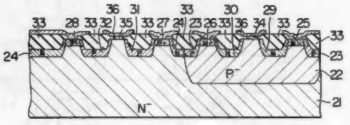
Division of Ser. No. 791,184, Apr. 27, 1977, abandoned. This application Jan. 5, 1979, Ser. No. 1,312

Claims priority, application Japan, Apr. 28, 1976, 51-47698

Int. Cl.³ H01L *21/265, 29/78*

U.S. Cl. 29—571 **20 Claims**





1. A method of manufacturing an MIS type semiconductor device, comprising steps of:

(a) forming a thermally oxidized film on a surface of a semiconductor substrate of one conduction type;

(b) forming a nitride film on said oxide film;

(c) etching selectively said oxide film and nitride film to expose first and second surface portions of said surface spaced from each other;

(d) introducing impurities of the other conduction type opposite to said one conduction type into said substrate through said exposed first and second surface portions to form first and second semiconductor regions spaced apart from each other by a predetermined distance;

(e) thermally oxidizing the surfaces of said first and second semiconductor regions by using said oxide film and said nitride film as masking means to form first and second buried oxide films immediately above said first and second semiconductor regions, said buried oxide films having a thickness greater than that of said oxide film;

(f) removing said nitride film;

(g) forming a polycrystalline silicon layer on said semiconductor substrate between said first and second buried oxide films, said polycrystalline layer having peripheral portions extending over said first and second buried oxide films;

(h) removing said oxide film in which said buried oxide films and said polycrystalline silicon layer are not located to expose third and fourth surface portions of said surface; and

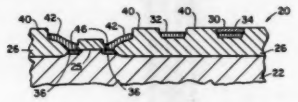
(i) introducing impurities of the other conduction type into said substrate through said exposed third and fourth surface portions to form third and fourth semiconductor regions of which parts are contacted with said first and second semiconductor region, respectively, said third and fourth semiconductor regions having a higher impurity concentration than that of said first and second semiconductor regions.

4,285,117

METHOD OF MANUFACTURING A DEVICE IN A SILICON WAFER

Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Sep. 6, 1979, Ser. No. 73,042
Int. Cl.[3] H01L *21/285*
U.S. Cl. 29—571 5 Claims



1. A method of manufacturing devices in a semiconductor wafer **20** of a first conductivity type having formed on a portion of the body **22** an oxide dielectric **26** exposing active areas of the semiconductor body **22** whereat transistors are to be formed,

characterized by:

A. forming a polysilicon layer **28** having a predetermined resistance characteristic over the entire surface of the wafer **20**;

B. forming a silicon nitride masking layer **30** over the polysilicon layer **28**;

C. removing selected portions of the silicon nitride layer so that the silicon nitride layer will only remain over the source/drain regions **36** of the active areas and the locations of first level conductor runs **32**;

D. converting the exposed polysilicon **28** to an oxide dielectric;

E. removing the silicon nitride covering the source/drain regions **36** and first level conductor runs **32**;

F. doping the exposed polysilicon to a second conductivity type thus increasing the conductivity of the exposed polysilicon and forming source/drain regions **46** in the semiconductor body of a second conductivity type;

G. forming an oxide dielectric coating **52** over the entire surface of the wafer;

H. removing the oxide dielectric coating from the gate areas **54** of the transistor being formed;

I. forming a thin gate oxide **56** over the active surface of the wafer **20**;

J. removing the oxide dielectric coating from the interconnect work sites of the first level conductor runs **32**; and

K. placing electrical conductors **58** at selected locations on the wafer surface to provide electrical contact with the gate oxide **56** and contact sites of the first level conductive runs **32**.

4,285,118

CABLE HARNESS ASSEMBLY AND ELECTRICAL TESTING MACHINE

Michael S. Peppler, Lancaster, and Johannes C. W. Bakermans, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

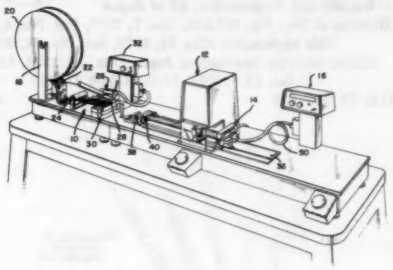
Division of Ser. No. 772,204, Feb. 25, 1977, Pat. No. 4,110,880. This application May 17, 1978, Ser. No. 906,536
Int. Cl.[3] G01R *31/08;* H01R *43/00*
U.S. Cl. 29—593 5 Claims

1. A method of fabricating cable harnesses of multi-conductor flexible cable terminated with at least two electrical connectors while simultaneously testing each connection for electrical continuity as the connection is effected, comprising the steps of:

feeding a first end of a multi-conductor flat flexible cable to a terminating station;

terminating said first end of said multi-conductor flat flexible cable with a first electrical connector having therein a plurality of contact terminals, each said terminal having an insulation piercing portion adapted to engage a respective conductor of the cable;

indexing said cable to engage said terminated first connector in a test fixture having therein terminals contacting each terminal of said first connector while presenting a subsequent portion of said cable to said terminating station; and



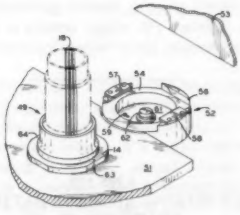
terminating said subsequent portion of said cable with a next successive electrical connector while electrically testing each connection of each said successive electrical connector simultaneously with termination of each said successive electrical connector on said cable.

4,285,119

METHODS AND APPARATUS FOR USE IN PRODUCING WOUND COILS AND PLACING SUCH COILS ON MAGNETIC CORES

Richard J. Habegger, Woodburn, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 30, 1979, Ser. No. 34,492
Int. Cl.[3] H02K *15/06*
U.S. Cl. 29—596 28 Claims

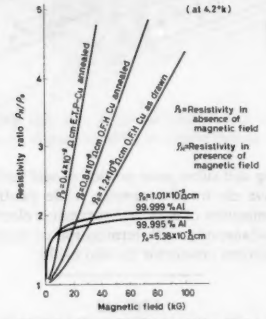


1. A method of utilizing a coil injection tool pack at least involving placing the tool pack in winding turn receiving relationship with coil winding apparatus having a tool pack nest, wherein the tool pack includes a plurality of elongate elements that mutually define a plurality of axially extending gaps spaced apart about the periphery of the tool pack and a base supporting the elongate elements; said method further comprising: moving the tool pack laterally, relative to the longitudinal extent of the elongate elements, toward the tool pack nest; disposing a portion of the base adjacent to tool pack retainer means, and disposing the tool pack in overlying relationship with respect to aligning means for assuring mutual alignment of the tool pack and the tool pack nest while also disposing the tool pack in overlying relationship with respect to a movable support located at the tool pack nest; moving both the aligning means and the movable support axially, relative to the longitudinal extent of the elongate elements, and thereby causing the aligning means to assure mutual alignment of the tool pack and tool pack nest, and thereby also clamping at least a portion of the base against the tool pack retainer means.

4,285,120
SUPERCONDUCTOR COVERED WITH REINFORCED ALUMINUM MATRIX AND METHOD FOR MANUFACTURE THEREOF

Harehiko Nomura, 3260 Nakatou, Musashi-Murayama-shi, Tokyo; Kenichi Koyama, 338-1 Yamaguchi, Tokorozawa-shi, Saitama-ken, and Kazuhiko Terao, 191 Rokkumachi-Otsu, Komoro-shi, Nagano-ken, all of Japan

Division of Ser. No. 757,631, Jan. 7, 1977, Pat. No. 4,200,767. This application May 24, 1979, Ser. No. 42,592
Claims priority, application Japan, Jan. 13, 1976, 51/2419
Int. Cl.[3] H01V *11/00*; G01R *33/02*
U.S. Cl. 29—599 **4 Claims**



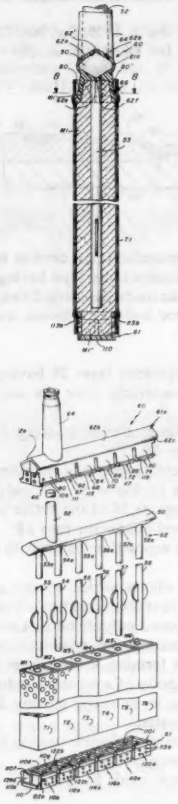
1. A method for the manufacture of a superconductor covered with an aluminum matrix of augmented tensile strength, which method comprises steps of inserting a superconductive wire in a pipe of aluminum having alumina dispersed therein and subjecting the resultant assembly of said pipe and said wire to wire-drawing for thereby forming a unitary superconductor.

4,285,121
METHOD OF MAKING STORAGE BATTERIES OF THE LEAD-ACID CLASS

Roy A. Guimond, Holden; Nanci W. Reed, Sudbury, and John E. Gulliksen, Shrewsbury, all of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Division of Ser. No. 949,890, Oct. 10, 1978, Pat. No. 4,202,936. This application Jul. 26, 1979, Ser. No. 61,063
Int. Cl.[3] H01M *10/12*
U.S. Cl. 29—623.1 **3 Claims**

3. In the manufacture of plate means for use in a lead-acid battery wherein a molten lead alloy is first formed into a current carrying grid structure having a top bar, post means and a plurality of spaced apart spines joined to the top bar and wherein active material is received in retaining means in contact with the spaced apart spines, that improvement which comprises enclosing the top bar, post means and portions of the spaced apart spines at their points of joinder with the top bar with grid complement means, said grid complement means being formed of a resilient, chemically inert material impervious to electrolyte, then engaging the grid complement means in the said retaining means, and applying the grid complement means in successive steps which include first inserting the post means in a sleeve part of the complement, thereafter folding adjoining portions of the grid complement means around the top bar and the spines at their points of joinder with the top bar and then slideably inserting depending portions of the grid complement means within the said retaining means for the active material.



4,285,122
HEAT-TREATED, ORGANIC SOLVENT-TREATED MANGANESE DIOXIDE

Akiya Kozawa, Middleburg Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,241
Int. Cl.[3] H01M *6/16*
U.S. Cl. 29—623.1 **5 Claims**

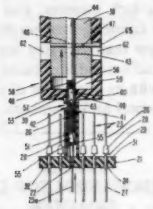
1. A method for assembling a nonaqueous cell employing a manganese dioxide-containing cathode comprising the steps:
removing the moisture content from particulate manganese dioxide to less than 300 parts per million;
(b) contacting the particulate manganese dioxide with at least one organic solvent such that the solvent substantially fills a majority of the pores of the manganese dioxide.
(c) blending the solvent treated manganese dioxide with a conductive agent and a binder to form a manganese dioxide-containing cathode; and
(d) assembling the solvent-treated manganese dioxide-containing cathode into a cell along with an anode and an electrolyte solution.

4,285,123

PIN REMOVAL TOOL

William M. Chisholm, Midlothian, Va., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 21, 1979, Ser. No. 106,115
Int. Cl.[3] H05K *3/30*
U.S. Cl. 29—764 12 Claims



1. A pin-removal tool for removing a pin from a support where the pin is formed with a portion extending laterally from the axis thereof, comprising:

a casing;

a pin-removal member positioned for movement within the casing;

means for axially moving the pin-removal member within the casing upon rotation of the casing; and

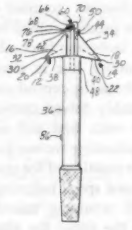
means formed on the pin-removal member for capturing the laterally extending portion of the pin with the pin-removal member so that upon rotation of the casing the pin-removal member moves axially within the casing to withdraw the captured pin from the support.

4,285,124

SAFETY RAZOR FOR TRIMMING BEARDS AND MUSTACHES

Yuri G. Diakonov, 36024 St. Ives Ct., Fraser, Mich. 48026

Filed Sep. 21, 1979, Ser. No. 77,572
Int. Cl.[3] B26B *21/06*
U.S. Cl. 30—34.1 5 Claims



1. A safety razor for trimming mustaches and beards comprising:

a head, blade, and support including complementary thin tapered ends extending from an upper edge to a point proximate a lower edge;

a cutting edge of the blade projecting from the head parallel to spaced above and proximate the lower edge; and

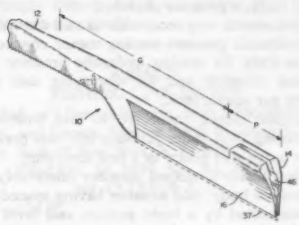
a miniature safety razor supported by a handle and movable between a first position wherein it is retracted into the head to a second position beyond deployed above the head for trimming beards and mustaches beneath the user's nose.

4,285,125

BARBER-TYPE RAZOR

Evan N. Chen, Fairfield; Lawrence Crainich, Stratford, and Frank A. Ferraro, Trumbull, all of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 14, 1979, Ser. No. 39,084
Int. Cl.[3] B26B *21/10*
U.S. Cl. 30—53 18 Claims



1. A barber-type razor for housing a replaceable blade comprising:

a body member having a handle and a blade-receiving base portion;

a clamp member hinged to the base portion by means of a hinge between and extending longitudinally of said base portion and said clamp member, said hinge being located between the top and bottom portions of said base portion and said clamp member, said base portion and said clamp member forming opposite halves of the razor;

bias means provided for urging the bottom portions of said razor halves relatively toward one another for retaining a blade therebetween below the hinge, the blade being released when the top portions of said razor halves are moved relatively toward one another;

said razor having a first region (G) along a top portion thereof for receiving manual gripping forces during normal use and a second region (P) forward of said first region for receiving manual blade-releasing pinch forces; and

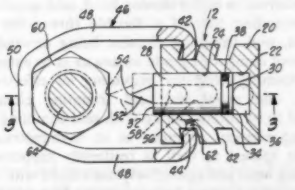
one of said razor halves extends upwardly beyond the other along said first gripping region (G) to receive any such gripping forces substantially exclusively of the other to prevent inadvertent release of a blade, said razor halves being structured along said second region to facilitate application of a manual blade-releasing pinch force to both halves in said second region (P).

4,285,126

HYDRAULICALLY ACTUATED APPARATUS

Lawrence F. Irwin, 10835 Bellagio Rd., Bel Air, Calif. 90024

Filed Sep. 4, 1979, Ser. No. 72,156
Int. Cl.[3] B26B *17/00*; F15B *15/18*
U.S. Cl. 30—180 9 Claims



1. An hydraulically actuated apparatus comprising:

(a) a hollow body having internal walls defining a piston

chamber, said body being provided with at least one groove in the exterior thereof;

(b) a cylindrically shaped piston reciprocally movable within said piston chamber, said piston being provided with an annular groove and including:

(i) a first surface extending beyond said hollow body; and

(ii) a second, spaced apart opposing surface having an area which is in even multiples of one square inch and defining, in cooperation with said internal walls of said hollow body, a pressure chamber;

(c) an elastomeric ring receivable in said annular groove;

(d) an hydraulic pressure sensing means connected to said hollow body for sensing hydraulic pressure within said pressure chamber and for displaying said pressure in pounds per square inch;

(e) hydraulic means connected to said hollow body for introducing fluid under pressure into said pressure chamber to move said piston in a first direction;

(f) a substantially U-shaped member removably affixed to said hollow body, said member having spaced apart arms interconnected by a bight portion said arms having inturned end portions adapted to be removably received in said groove provided in said body; and

(g) a cutter element operably associated with said piston whereby movement of said piston in a first direction will cause said cutter element to move toward said bight portion of said U-shaped member.

4,285,127

APPARATUS FOR TRIMMING PLANTS

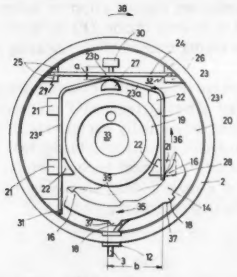
Gerhard Zerrer, Korb, and Roland Beier, Esslingen, both of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 52,910

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1978, 2828425

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **25 Claims**



1. An apparatus for trimming plants, comprising:

a trimming head and guide means therewith;

means operatively connected to said trimming head for rotating same;

a spool received in said trimming head, said spool containing for unwinding thereof a flexible thread-like trimming element, said trimming element being unwindable from said spool along said guide means so as to extend beyond said trimming head for providing an effective cutting length, said spool and said trimming element being adapted to be rotated along with said trimming head; and

a coupling element arranged as an asymmetrical bracket member spaced as well as resiliently supported in said trimming head and operatively associated with said spool, said coupling element being movable by centrifugal force from a lock position in which said trimming element is prevented from being unwound from said spool to a release position in which said trimming element can be unwound by movement of said spool relative to said trimming head in response to wear of said trimming element to restore said effective cutting length;

said coupling element including at least first and second lock members, and said spool including means pertaining to at least one of said lock members for effecting said lock position and said release position of said coupling element, with pertaining means being operatively engageable by said at least one lock member, said coupling element including a single coupling member having a first leg and a second leg longer than said first leg formed as a bracket with said first and second legs being substantially parallel to each other with an extension of each leg being one of said first and second lock members.

4,285,128

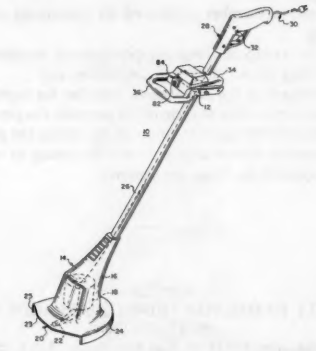
SPOOL FEED MECHANISM FOR LINE FED GRASS TRIMMER

John W. Schnell, and Max K. Haenel, both of Columbia, Mo., assignors to Benchmark Tool Company, Vandalia, Ohio

Filed Nov. 16, 1979, Ser. No. 95,604

Int. Cl.³ A01D *50/00*

U.S. Cl. 30—276 **10 Claims**

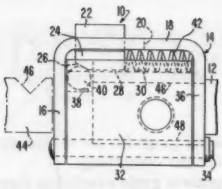


1. In apparatus for cutting vegetation with the free end of a flexible, non-metallic line played out from a spool, including a rotatably driven cutting head for spinning the free end of the line, a spool feed mechanism mounted on said apparatus for incrementally feeding a predetermined length of line from said spool, said mechanism including in combination; a spool about which said flexible cutting line is wound, said spool being mounted for rotation about the central axis thereof at a position remote from said rotatably driven cutting head and including first and second ends with first and second spool indexing means, respectively, actuating means including first and second engagement means positioned for cooperative engagement with said first and second spool indexing means, respectively, one of said spool and actuating means being mounted for movement relative to the other for alternate engagement of said first spool indexing means and said first engagement means and said second spool indexing means and said second engagement means, respectively, one of said first and second engagement means and said first and second indexing means being displaced with respect to the other of said first and second engagement means and the other of said first and second indexing means, respectively, to provide successive incremental rotation of said spool in response to the alternate engagement of said corresponding engagement means and indexing means whereby successive predetermined lengths of cutting line are fed from said spool, and means for biasing one of said spool and actuating means to a first position whereby said first engagement means and first indexing means are normally engaged.

4,285,129
HOLDER FOR SABER SAW BLADE

Simon J. Hoffman, P.O. Box 75821, Los Angeles, Calif. 90075

Filed Aug. 1, 1979, Ser. No. 62,606
Int. Cl.³ B27B 19/00
U.S. Cl. 30—392 1 Claim

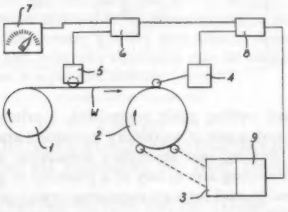


1. A holder for a saber saw blade having a notch in one side thereof comprising: a support having a pair of adjacent, relatively angularly disposed faces and a slot extending into the support from each face, respectively, there being a hollow region in the support for receiving a saber saw blade when the blade is in an operative position extending through the portion of the slot in one of the faces; a cam member having an inclined surface and a tab projecting laterally therefrom, said support having a first, hollow interior space adjacent to other face of the support, the cam member being slidably mounted in said first space for movement along a rectilinear path and said tab extending through the portion of the slot in said other face and projecting laterally from the support; a roller for engaging said inclined surface of the cam member, the support having a second, hollow, interior space adjacent to and communicating with the first space and said region, said roller being moveable into the notch of the blade when the blade is in said operative position, there being opposed surfaces within the support at the opposed boundaries of said region for engaging the side margins of the blade to prevent rotation thereof relative to the support when the roller is in the notch; and a spring in the first space for biasing the cam member toward the second space.

4,285,130
CONTROL DEVICES FOR WEB-FEEDING MACHINES

Kenneth Chandler, Bristol, England, assignor to Masson Scott Thrissel Engineering Limited, Bristol, England

Filed Feb. 1, 1980, Ser. No. 117,676
Claims priority, application United Kingdom, Feb. 10, 1979, 04793/79
Int. Cl.³ G01B 5/04
U.S. Cl. 33—132 A 11 Claims

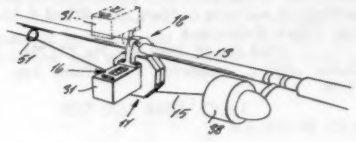


1. A control device for a machine for feeding continuous web material (e.g. a paper winder) comprising means for presetting a desired length of web to be fed; means for sensing the web speed during feeding and producing a signal representing said speed; means for producing a length signal representing the length of web already fed; data processing means connected to said presetting means, to said speed sensing means and to said means for producing a length signal; and braking control means operable in response to a brake control signal to produce controlled deceleration of the web; said data processing means being adapted in response to said speed signal to produce a run-out signal representing the length of web fed during said controlled deceleration of the web from the speed represented by the speed signal and then to compare said run-out signal, said length of signal, and a signal from the presetting means representing said desired length, and to deliver said brake control signal to the braking control means when said comparison indicates that the desired length of web minus the length already fed is not greater than that represented by the run-out signal.

4,285,131
FISHING LINE METER

Steve Demchak, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Oct. 11, 1979, Ser. No. 83,606
Int. Cl.³ G01B 3/12
U.S. Cl. 33—134 R 3 Claims

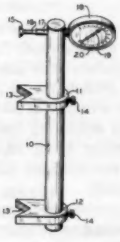


1. A fishing line, comprising in combination, a housing with pulley wheel rotatably mounted inside said housing, a counter mechanism secured to said housing driven by said pulley wheel, and a mounting bracket secured to said housing on a side of a fishing pole having a fishing line which is looped around said pulley wheel, wherein said housing comprises a case and pivotable cover for access to said pulley wheel and line including spaced notches through said housing for said line to move through said housing when closed wherein said counter mechanism is driven by a shaft on which said pulley wheel is affixed, said shaft extending through said housing including a follower wheel in said housing retaining said line on said pulley wheel wherein said counter mechanism includes a bell and means driven by said counter mechanism striking the bell at predetermined intervals.

4,285,132
PISTON ROD RUNOUT GAUGE

Kenneth D. Kloster, 6649 Millridge, Maumee, Ohio 43537

Filed Oct. 22, 1979, Ser. No. 86,788
Int. Cl.³ G01B 3/22, 5/24
U.S. Cl. 33—172 R 4 Claims



1. A piston rod runout gauge for determining the concentricity of the rod with respect to its cylinder comprising:

a. an elongate support providing a handle for manipulating the gauge, said support having a longitudinal axis;

b. cylinder engaging means for holding said support in paral-

lel relation to the cylinder, said engaging means including a pair of spaced apart brackets shiftable along said support, said brackets extending generally normal to the longitudinal axis of said support and including V-shaped notches in the outer ends of said brackets for engaging the cylinder;

c. an actuating device in the end of said support to engage the piston rod, said device spaced from said brackets and including a feeler probe extending normal to the longitudinal axis of said support in parallel relation to said brackets; and

d. means responsive to said actuating device to indicate the degree of concentricity of the piston rod relative to its cylinder.

4,285,133

TOOTH FLANK TESTING APPARATUS AND METHOD OF TESTING TOOTH FLANKS OF GEARS

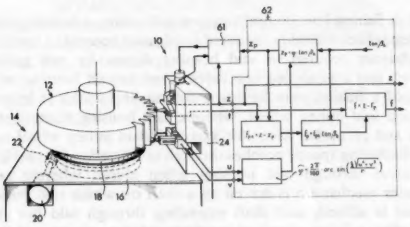
Armin Sterki, Uetikon, and Gerd R. Sommer, Dietikon, both of Switzerland, assignors to Maag Gear-Wheel & Machine Co. Ltd., Zürich, Switzerland

Filed Jul. 25, 1980, Ser. No. 172,291

Claims priority, application Switzerland, Aug. 13, 1979, 7417/79

Int. Cl.³ G01B *5/20, 7/28*

U.S. Cl. 33—179.5 R **4 Claims**



1. A gear tooth flank testing apparatus comprising:

a gear cutting machine containing a bed;

a housing erectable upon said bed;

two cross-wise arranged carriages;

drive means provided for said two cross-wise arranged carriages;

displacement path measuring means provided for said two cross-wise arranged carriages;

a feeler mounted at said housing by means of said two cross-wise arranged carriages and moveable along two coordinate axes intersecting the lengthwise axis of the gear to be tested;

control and evaluation circuit means for guiding said measuring feeler along a tooth flank of the gear to be tested and for comparison of an actual position of the measuring feeler with a predetermined reference position;

a feeler element arranged at said housing in spaced relationship from said measuring feeler;

said feeler element being capable of being placed into contact with two mutually neighboring tooth flanks of the gear to be tested;

two additional cross-wise arranged carriages for freely moveably guiding said feeler element essentially parallel to both of said coordinate axes;

a displacement path measuring device operatively associated with each of said additional cross-wise arranged carriages; and

said displacement path measuring device being connected with a control and evaluation circuit.

4,285,134

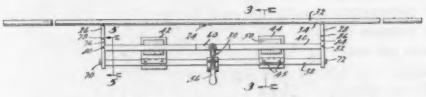
SHINGLE LOCATING GAUGE

Thomas G. Schmanski, 25925 Mackinac, Roseville, Mich. 48066

Filed Jul. 7, 1980, Ser. No. 166,759

Int. Cl.³ G01B *3/30, 5/16*

U.S. Cl. 33—188 **7 Claims**



1. A shingle locating gauge for use in aligning and applying roofing or siding shingles comprising:

an elongated alignment guide adapted to support the lower edges of shingles being applied;

a pair of generally parallel, elongated side supports attached to said alignment guide and extending therefrom;

a load spreading bar extending generally parallel to said alignment guide and connected to each of said side supports; and

an elongated support member extending generally parallel to said alignment guide and rotatably connected to each of said side supports, said elongated support member having a clamp mounted thereon for applying force against said load spreading bar and further having a pair of spaced apart alignment stops mounted thereon for aligning said member with respect to a course of previously applied shingles, each of said alignment stops including a U-shaped portion adapted to receive an edge portion of a previously applied shingle and an upwardly extending portion in opposition to a portion of said load spreading bar.

4,285,135

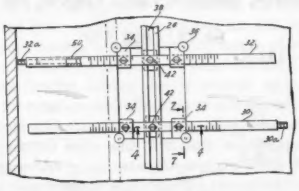
PANEL CUTTING GUIDE

Michael F. Minozzi, Jr., 10 Mein Dr., New City, N.Y. 10956

Filed Aug. 13, 1979, Ser. No. 66,165

Int. Cl.³ B27C *1/00;* **G01B** *3/00*

U.S. Cl. 33—189 **17 Claims**



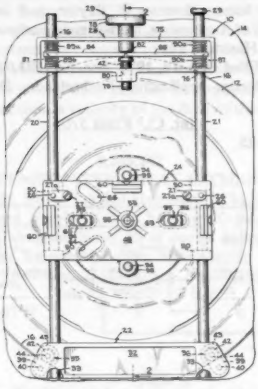
1. A panel cutting guide comprising, a primary elongated measuring rod; a pair of secondary measuring arms, means for releasably locking said secondary measuring arms on said primary measuring arm in any of a plurality of selected positions normal to said primary measuring arm; a pair of marker elements slidably mounted on said secondary measuring arms, on opposite sides of said primary measuring arm and means for releasably locking said marker elements in any of a plurality of selected positions on said secondary measuring arms; said marker elements being generally rectangular in plan, having straight side guide edges and selectively operable means for forming a mark on a panel; said means for forming a mark being located at one corner of said rectangular marker elements to form a mark at the intersection of two sides of said rectangular marker elements.

4,285,136

WHEEL CLAMP

Marshall P. Ragan, Mayflower, Ark., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 17, 1980, Ser. No. 112,764
Int. Cl.³ G01B *5/255, 11/275*
U.S. Cl. 33—203.18 **12 Claims**



1. A wheel clamp for supporting a wheel aligning tool in a plane parallel to the plane of a wheel rim, comprising

a frame;

a lower bracket attached to one end of the frame;

means mounted on the lower bracket for engaging a peripheral lip extending outward from the wheel rim by which the one end of the frame is removably attached to the wheel rim;

an upper bracket slidably mounted on the other end of the frame, the distance between the upper and lower brackets being adjustable to correspond to the diameter of the wheel rim;

means mounted on the upper bracket for engaging the peripheral lip on the wheel rim by which the other end of the frame is removably attached to the wheel rim;

means mounted on the upper bracket for selectively urging the upper bracket toward or away from the lower bracket;

a center bracket slidably mounted on the frame between the upper bracket and the lower bracket, having two or more slots therein located and sized to correspond to lug bolt patterns commonly found on automobile wheels,

a spindle projecting from the center bracket in a direction perpendicular to the plane of the wheel rim and adapted to support the wheel aligning tool,

two or more spacers, each adapted to engage a vehicle wheel at one end and to be received within one slot located on the center bracket and affixed thereto at the opposite end, whereby the frame may be attached to the wheel rim in a parallel manner.

4,285,137

TRAJECTORY COMPENSATING DEVICE

Fred L. Jennie, 112 Promontory Dr. West, Newport Beach, Calif. 92660

Filed Jan. 15, 1980, Ser. No. 112,369
Int. Cl.³ G01C *3/20*
U.S. Cl. 33—246 **8 Claims**

1. A trajectory compensating device for use in combination with a rifle scope of the type having a reticle and a turret controlled elevational correction system including a turret which comprises:

said reticle having a primary sighting plane and a secondary sighting plane;

said turret including an indexing mark located on said turret;

said turret including a turret cap operatively connected to said turret controlled elevational correction system so that said turret controlled elevational correction system is controlled by rotation of said turret cap about said turret;

said turret cap including an indicia carrying means, said indicia carrying means including at least two individual indicia;

said indicia carrying means located on said turret cap such that each of said individual indicia can be independently aligned with said indexing mark by rotating said turret cap;

the first of said indicia on said indicia carrying means corresponding to a distance calibration mark wherein when said distance calibration mark is aligned with said indexing mark the line of sight through said rifle scope using said primary sighting plane of said reticle will be aligned with the center of impact on a target of a bullet of a fixed size expelled from a cartridge containing a fixed load down the muzzle of a firearm on which said rifle scope is mounted when said firearm is located at a distance from said target corresponding to the same distance being represented by said distance calibration mark;

the second of said indicia corresponding to an indicator mark wherein when said indicator mark is aligned with said indexing mark and said bullet of said fixed size is expelled from said cartridge containing said fixed load

down said muzzle of said firearm on which said rifle scope is mounted the trajectory of said bullet will first cross the line of sight through said rifle scope using said primary sighting plane of said reticle and next cross the line of sight through said rifle scope using the secondary sighting plane of said reticle and before said trajectory crosses said line of sight of said rifle scope using said primary sighting plane of said reticle the distance between said trajectory and said line of sight of said rifle scope using the primary sighting plane of said reticle as measured perpendicular from said line of sight of said rifle scope using said primary sighting plane of said reticle to said trajectory is not greater than a predetermined deviation distance and after said trajectory crosses said line of sight of said rifle scope using said primary sighting plane of said reticle but before said trajectory crosses said line of sight of said rifle scope using said secondary sighting plane of said reticle the distance between said trajectory and one of said lines of sight of said rifle scope using either said primary sighting plane of said reticle or said secondary sighting plane of said reticle as measured perpendicular from both said line of sight of said rifle scope using said primary sighting plane and said line of sight of said rifle scope using said secondary sighting plane of said reticle to said trajectory is not greater than said predetermined deviation distance.

4,285,138

TRAILER HITCH VISUAL ALIGNMENT DEVICE

James L. Berry, #29 Hilton Head Ter., Hilton Head, S.C. 29928

Filed Mar. 13, 1980, Ser. No. 130,139
Int. Cl.³ G01C *5/00;* **B60D** *1/06*
U.S. Cl. 33—264 **4 Claims**

1. For use with a ball carrying hitch arm secured to the rear of a towing vehicle centrally thereof and a trailer having a socket carrying arm to arrange a hookup coupling between

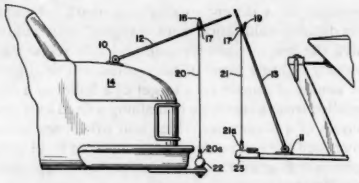
said ball and said socket; a trailer hitch visual alignment device comprising

(a) a pair of magnetic bases one of which is attachable to the body of the towing vehicle and the other of which is attachable to the socket carrying arm of the trailer,

(b) alignment wands carried by said magnetic bases,

(c) a elastic gromet on each alignment wand,

(d) a pair of alignment flags each having a foot extending off its base and adapted to be retained between said elastic gromet and each wand,



(e) and a plumb line having a plumb bob carried by at least one of said wands and being adjustable through the contact point of the gromet and wand until the line is plumb over the towing ball whereby upon backing the towing vehicle toward the trailer when the alignment flags cross the hitch between the ball on the hitch arm and socket on the trailer arm may be coupled for towing the trailer.

4,285,139

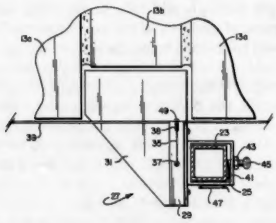
TRIG POLE FOR MASONRY CONSTRUCTION

Charles W. Huston, 6931 Waterloo Rd., NW., Canal Winchester, Ohio 43110

Filed Sep. 28, 1979, Ser. No. 79,817

Int. Cl.³ G01C *15/10*

U.S. Cl. 33—407 **4 Claims**



1. In a system of poles for aligning courses of brick of a brick wall being constructed as a facing for a building structure construction wall, wherein there is a pole disposed at each corner of said wall, each corner pole including adjustable means for securing said pole at said corners, a mason's rule carried adjustably by each corner pole, and a corner line block adjustably carried by each corner pole wherein a line is tensioned between each corner line block of each corner pole, the improvement which comprises:

at least one pole disposed intermediate between said corner poles, said intermediate pole having adjustable means for securing said pole to said brick wall and/or said construction wall, a mason's rule adjustably carried by said intermediate pole, and an intermediate line block for ensuring that said line remains tensioned between said corner line blocks, all of said line blocks being synchronously adjusted in vertical height so that said tensioned line defines the horizontal component of each course of brick, said intermediate line block has attached thereto a template having a rectangular portion which extends inside the outer vertical plane of said brick wall when said intermediate pole is in an operable position, said rectangular portion defining the position for a brick recessed from said vertical plane of said brick wall.

4,285,140

DEWATERING AND UPGRADING LOW RANK COAL BY A TWO-STEP HYDROTHERMAL TREATMENT

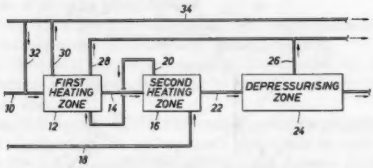
Leopold van Raam; Herman P. Ruyter, and Josefus W. van Breugel, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 10, 1979, Ser. No. 102,073

Claims priority, application Netherlands, Dec. 18, 1978, 7812248

Int. Cl.³ F26B *5/04*

U.S. Cl. 34—15 **4 Claims**



1. A process for dewatering and upgrading low rank coal or other carbonaceous material comprising:

heating a mixture of the coal and a substantially equal weight of free water to a temperature of from about 150° to 300° C. while maintaining a pressure which substantially prevents the vaporization of water;

mechanically separating substantially all of the water from the mixture; and

heating the so-separated coal for from about 5 minutes to 5 hours at a temperature of from about 300° to 400° C., which temperature exceeds the temperature used in the prior heating step, is applied at a pressure which at least substantially equals the pressure used in the prior heating step and is a pressure at which water is vaporized so that the water content of the coal is reduced to less than about 10% by weight and the coal is significantly upgraded by decarboxylation without significant gasification.

4,285,141

METHOD AND APPARATUS FOR DRYING ARTICLES OF CERAMIC WARE

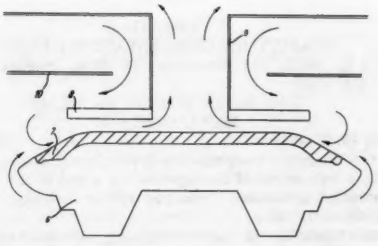
Sidney Wedgwood, Newcastle-under-Lyme, England, assignor to Interdri Limited, Stoke-on-Trent, England

Filed Sep. 11, 1978, Ser. No. 941,183

Claims priority, application United Kingdom, Sep. 13, 1977, 38076/77; May 6, 1978, 18127/78

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—21 **15 Claims**



1. A method of drying articles of ceramic ware, said method comprising supporting a mould and an article to be dried on a

mould support such that the article has an exposed surface, locating the mould support and a member in a spaced apart relation such that the member has a surface extending in close relation over at least a substantial part of the exposed surface of the article and defines a gap between the exposed surface and said member, introducing a drying agent into said gap substantially at the periphery of the article, inducing a flow of the drying agent in the gap with the maximum velocity of the flow at said surface of said member by extracting the drying agent at a location substantially centrally of the article to be dried, and arranging the close relation of said member to the exposed surface so as to substantially confine the exposed surface to the effect of the maximum velocity of the flow of the drying agent.

4,285,142

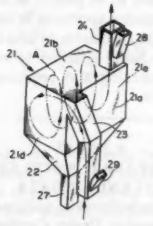
SUSPENSION TYPE HEAT EXCHANGER

Takeshi Suzuki, Kobe; Takashi Hatamori, Miki; Mikio Murao, Kobe; Minoru Nezuka, Kobe; Chikanori Kumagai, Kobe, and Masaharu Takagishi, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 27, 1979, Ser. No. 70,199

Int. Cl.³ F26B *17/10*

U.S. Cl. 34—57 E **12 Claims**



1. A suspension type heat exchanger including means for separating solid particulate matter from a gas stream in which said particulate matter is suspended comprising:

an essentially unobstructed separating chamber defined by stationary walls in the form of a prism having a substantially horizontal center axis and being axially elongated;

a collecting chamber located beneath said separating chamber, the collecting chamber and the separating chamber being in unobstructed direct communication with each other; and

an inlet duct and an outlet duct each connected to a wall of the separating chamber and each duct communicating with the separating chamber at a location substantially spaced from the location of the other duct along the length of the chamber, the inlet duct and the outlet duct each being oriented non-radially with respect to the axis of the separating chamber and transverse to said axis;

said inlet duct comprising means for introducing into the separating chamber a linearly flowing gas stream in which is suspended solid particulate matter, the orientation of the inlet duct relative to the separating chamber is such as to cause said gas stream to flow spirally about the axis of the separating chamber to the outlet duct, centrifugal force caused by said spiral flow propels the particulate matter outwardly away from the spiral flow thereby allowing the particulate matter to drop into the collecting chamber while the gas stream continues to flow to the outlet duct through which it flows linearly, the separation of the particulate matter from the gas thereby being efficient, the pressure loss in the separating chamber being low and the height of the particulate matter separating means being relatively small due to the horizontal orientation of the separating chamber axis.

4,285,143

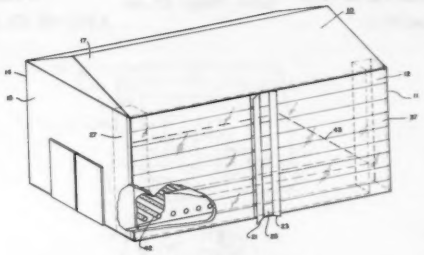
SOLAR GRAIN DRYING/STORAGE BUILDING

Jack E. Hufford, and William E. Mosmeier, both c/o Iron Horse Bldgs., Circleville, Ohio 43113

Filed Apr. 18, 1979, Ser. No. 31,324

Int. Cl.³ F26B *3/28*

U.S. Cl. 34—93 **10 Claims**



1. An enclosure for solar-heated air drying/storing of crops comprising:

one side of said enclosure in its entirety, having a structural transparent material,

a wall positioned adjacent the inside of said transparent side to form an air duct,

an absorbent material positioned in said air duct, and

an air intake having means for passing air through said duct and over said absorbent material;

a plenum chamber connected to each of the extreme ends of said duct; a planar array of tubing having a multiplicity of air ports therein connected to said plenum, a blower for each of said plenum chambers directing air from said duct to said plenums and from said plenums to said tubing; and

means positioning said planar array of tubing over the floor of said enclosure to direct solar heated air upwardly through the crops stored in said enclosure.

4,285,144

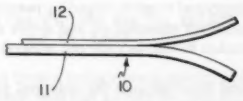
INNER SOLE FOR FOOT WEAR

Roy J. Power, 2125 Ivy Square, No. 8, Charlottesville, Va. 22901

Filed Aug. 16, 1978, Ser. No. 934,017

Int. Cl.³ A43B *13/40*

U.S. Cl. 36—44 **5 Claims**

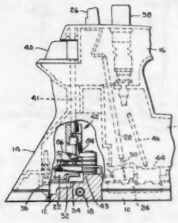


1. An inner sole for foot wear which comprises a base layer and an upper layer adhesively joined to form a laminate, each of said layers comprising a foamed elastomeric rubber, said base layer having a compression deflection in the range of 5 to 9 psi, a minimum elongation of 200% and a resilience as measured by the Bayshore Rebound method of at least 50% and said upper layer having a minimum elongation of 100% and a resilience as measured by the Bayshore Rebound method of less than 30%; the resiliency and thickness of said upper layer being selected to prevent the laminate from bottoming out during use and the base layer being substantially thicker than the upper layer.

4,285,145
THERMOSTAT AND IRON ASSEMBLY

Charles A. Balchunas, Bethany, Conn., assignor to General Electric Company, New York, N.Y.

Division of Ser. No. 51,831, Jun. 25, 1979, Pat. No. 4,259,655.
This application Aug. 25, 1980, Ser. No. 180,520
Int. Cl.³ D06F 75/06; H01H 37/26
U.S. Cl. 38—77.7 3 Claims



1. In an electric steam iron having an enclosed water tank in a shell under connected handle structure and a steam generating soleplate with ports for distribution of steam on demand, a pump connected to the tank with a button on the handle for manual pump actuation to deliver water to the soleplate generating means and a mount on the soleplate for close support of a heat-responsive thermostat means to control the temperature of the soleplate, the improvement in said thermostat means comprising,

a substantially vertical control rod in the forward handle portion having manual temperature adjustment means external to the shell and high on the front thereof,

a stacked thermostat assembly of a lower heat deformable blade secured to said soleplate mount,

a conductive intermediate stiff spring blade,

a conductive upper less stiff spring blade,

all blades being supported, secured, and spaced apart at one end by interposed insulators and,

electrical contacts on said conductive blades with means transmitting heat deformable blade movement to said upper blade to make and break the electric circuit controlling said soleplate temperature,

a single structural bracket extending parallel over said blades and cantilever-mounted on and above said one end,

said bracket having an enlarged integral portion on its free end,

a vertical bore through the enlarged portion forming an elongated bearing guide between the ends of and over said blades,

a control shaft rotatably supported in said bore and extending through an opening in the upper blade to contact and position said intermediate blade,

means connecting said shaft and control rod to rotate the shaft by the external adjustment means,

an arcuate cam surface with end stops formed as part of the integral portion and facing said upper blade,

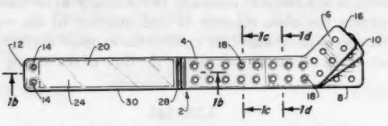
a cam follower extending from said shaft and biased by said intermediate blade against said cam surface,

whereby the single integral bracket performs multiple functions of shaft bearing, cam surface and stops, and fixed locator of all structural parts between the stacked assembly components and control rod and connected means.

4,285,146
TAMPER-RESISTANT IDENTIFICATION DEVICE

Stanley E. Charles, La Canada; Donald A. Long, Burbank, and Arthur H. Schimmelman, Agura, all of Calif., assignors to Precision Dynamics Corporation, Burbank, Calif.

Division of Ser. No. 702,335, Jul. 6, 1976, Pat. No. 4,221,063.
This application May 29, 1979, Ser. No. 42,971
Int. Cl.³ G09F 3/14
U.S. Cl. 40—21 C 7 Claims

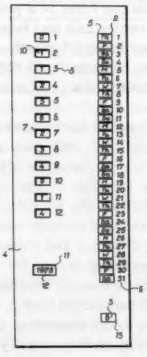


1. A plurality of separable identification devices in sheet form, each device comprising a flexible band of sufficient length for encircling engagement of an object to be identified, said flexible band having a first end portion, an intermediate portion and an opposed second end portion, said first end portion having at least two spaced apertures adjacent the terminus thereof, said second end portion having at least two spaced apertures adapted to be placed in aligned coincidence with said at least two spaced apertures in said first end portion when separated from the remainder of said sheet form and said first and second ends being adapted to receive securement means for securely fastening and retaining said ends in an encircling configuration.

4,285,147
UNIVERSAL APPARATUS FOR EVALUATING CALENDAR DATA

Karel Kolar, Praha, Czechoslovakia, assignor to Racionalizacni a experimentalni laborator, Praha, Czechoslovakia

Filed Nov. 20, 1979, Ser. No. 96,057
Claims priority, application Czechoslovakia, Nov. 20, 1978, 7554/78
Int. Cl.³ G09D 03/04
U.S. Cl. 40—109 4 Claims



1. A universal apparatus for evaluating calendar data comprising two relatively slidable, linearly arranged members, the first member being a main body provided on the reading surface with a scale of names of days and with a scale of seven members of a calendar code, and the second movable member is provided both with view slits at which there are members of a scale of digital calendar data, and with a view slit for the calendar code, an indication mechanism for indicating actual months consisting of view slits, at which there are arranged members of a scale of calendar months, a view slit for reading

the actual year, and a movable plate carrying code digits of actual months and a scale of years and being provided with members corresponding with other calendar systems, said calendar code includes the names of days M,Tu,W,Th,F,Sa,Su with a sequence of corresponding members of the calendar code 5,3,1,6,4,2,0.

4,285,148

UNIVERSAL ROUND CLOCK CALENDAR

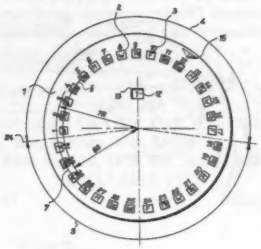
Karel Kolar, Prague, Czechoslovakia, assignor to Racionalizacni a experimentalni laborator, Prague, Czechoslovakia

Filed Nov. 20, 1979, Ser. No. 95,998

Claims priority, application Czechoslovakia, Nov. 20, 1978, 7555-78

Int. Cl.³ G09D *3/08, 3/00*

U.S. Cl. 40—115 **11 Claims**



1. A universal calendar comprising two superimposed members with rows of scales of digital calendar data and names of days comprising an upper member on which there is arranged a row of 31 view slits with respective members of a row of digital calendar data divided into two parts, the first part of which comprises 17 members in a row on one circle, and the other part of which comprises 14 members disposed in a row on a seconc circle, the other of said two members being a lower member on which there is arranged a scale of names of days divided into two parts having different numbers of members, respectively, disposed in a row on the same circles as the view slits on the upper member; the upper and lower members are concentric disks the view slits and digital calendar data being disposed on the circumference of the upper disk and being circumferentially divided into two parts, the first part comprising an odd number of members being situated on a first circle having a first diameter, and the other part comprising an even number of the remaining view slits and calendar data up to 31, situated on a second circle having a diameter different from that of the first circle, the other of said two disks being a lower disk on which there is arranged a scale of names of days, said scale of names of days being circumferentially divided into two parts each part having six members more than the respective part of the scale of digital calendar data and view slits on identical circles of the same diameter as the view slits and digital calendar data on the upper disk, the view slits for names of days are disposed on the circumference of the upper disk in a system of 31 orientation divisions, and on the upper disk there are also disposed view slits for members of a calendar code, the value of which for the desired month and year is disposed in a tabular manner on a visible surface of the calendar, and on the lower disk there is arranged a scale of names of days, such scale being circumferentially divided in two parts having 23 and 20 members, respectively on identical circles of the same diameter as the view slits on the upper disk and being disposed in a system of 31 orientation divisions, and on the lower disk there are disposed seven members of the calendar code, in the upper disk there is arranged a view slit for reading the definite member of the calendar code in which Monday is represented by a digit 5, Tuesday by 3, Wednesday by 1, Thursday by 6, Friday by 4, Saturday by 2, Sunday by 0, such digits being disposed on the lower disk.

4,285,149

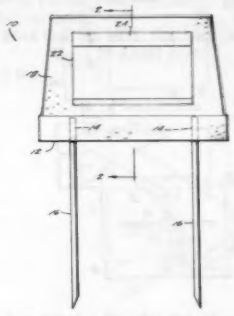
GRAVE MARKER

A. J. Berryhill, 1319 W. 3rd St., Taylor, Tex. 76574

Filed Feb. 21, 1980, Ser. No. 123,427

Int. Cl.³ G09F *19/00*

U.S. Cl. 40—124.5 **6 Claims**



1. A marker comprising a body having a face portion, a recess formed in said face portion, identification holder means disposed in said recess, said holder means including a plate having two opposite sides with edges extending toward each other to define parallel extending channels along said two opposite sides, transparent shield means for an identification sheet, said shield means having two opposite edges each disposed in one of said channels, said channels being of different depths, said edge of said plate of said channel of greater depth extending outwardly from said transparent shield means at an angle relative to said transparent shield means, spring means disposed in said channel of greater depth, said spring means being a curved segment of resilient metal having one end thereof bent to engage the bottom of said channel of greater depth whereby said spring means is held in position in said channel of greater depth, said spring means acting between said channel and said edge of said shield means disposed in said channel to urge said shield means toward and into said channel of said opposite side.

4,285,150

DISPLAY BOX

William C. Richardson, Sparta, N.J., and Mario Isoldi, Staten Island, N.Y., assignors to Album Graphics, Incorporated, New York, N.Y.

Filed Oct. 15, 1980, Ser. No. 197,018

Int. Cl.³ G09F *1/12*

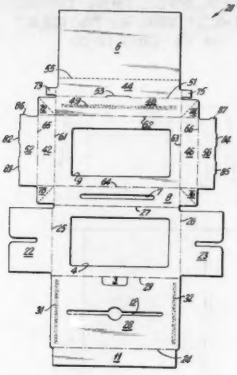
U.S. Cl. 40—312 **4 Claims**

1. A box formed from a unitary blank having a primary face and a secondary face, said box having an integral hinged lid;

the lid being a fold of a first panel over a second panel of the blank, the first panel constituting the interior lid panel and the second panel constituting the exterior lid panel to present the primary face of the blank outwardly on both faces of the lid, and inwardly folded flaps on each end of one of said first and second panels adhered to the secondary face of the other of said panels to form a pocket in the lid for receipt of a label insert;

the body of the box being formed from four side panels folded upwardly, one on each edge of an exterior floor panel, a first one of said side panels being integral with the exterior lid panel, the fourth side panel being integral with an interior floor panel, the interior floor panel being folded over the exterior floor panel and the fourth side panel with the secondary faces confronting, a portion of

the interior floor panel being folded upwardly with the fourth side panel and the remainder overlying the exterior floor panel, the second and third side panels having inwardly and downwardly folded flaps captured between the edges of the interior floor panel and the second and



third side panels, whereby all exterior and interior surfaces of the box are the primary face of the blank;

apertures in the exterior panels of at least the lid through which a label insert is visible, the interior panels overlying the label insert apertures.

4,285,151

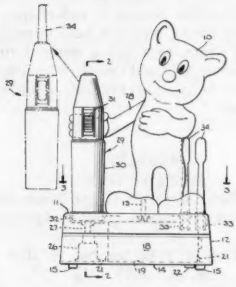
PERSONAL HYGIENE APPARATUS

Robert Gertler, 23-10A CPL Kennedy St., Bayside, N.Y. 11360

Filed Mar. 19, 1979, Ser. No. 21,468

Int. Cl.[3] G09F *27/00*

U.S. Cl. 40—455 **2 Claims**



1. A personal hygiene apparatus comprising, in combination,

a non-animated character figure having a substantially three dimensional configuration with non-movable character features, the character figure having an extend-appendage;

an electrically operated toothbrush having a housing removably supported at substantially one end thereof by the appendage;

a base means for vertically supporting the character figure and the toothbrush housing;

cavity means in the base means for receiving the housing and removably supporting the housing at another end thereof;

an exposed depressable upstanding button within the cavity means for engagement with the another end of the housing;

an audio producing means disposed within the base means for producing an audio production of a melody or message, the depressable button completing a circuit for operating the audio producing means;

whereby upon removal of the toothbrush housing from the cavity means the depressable button is released initiating the operation of the audio producing means and when the button is depressed the audio producing means will continue to operate only to the end of the melody or message then in progress.

4,285,152

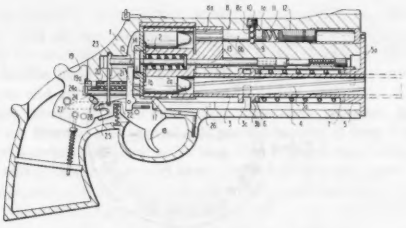
SEMI-AUTOMATIC DOUBLE ACTION REVOLVER

Joe O. Dean, 5841 NE. 22nd Ave., Fort Lauderdale, Fla. 33308

Filed Mar. 23, 1979, Ser. No. 23,317

Int. Cl.[3] F41C *1/00*

U.S. Cl. 42—59 **8 Claims**



1. In a semi-automatic, double action revolver having a frame, a rotatable cylinder including a plurality of circumferentially disposed, axially extending chambers containing bullets, a trigger mechanism including a trigger and a hammer mechanism including a hammer and a firing pin, a cylinder latch including a latch pin, the improvement comprising, a barrel aligned with the lowermost chamber of the cylinder, said barrel having a rifled bore adapted to be engaged by a bullet when travelling therethrough, said barrel being slidably and rotatably mounted in said frame, spring means mounted between said frame and said barrel for biasing said barrel in a direction toward said cylinder, whereby upon firing the revolver the thrust of the bullet engaging the rifled bore causes the barrel to rotate and slide forwardly compressing the spring to thereby absorb the initial shock and thrust imparted to the barrel.

4,285,153

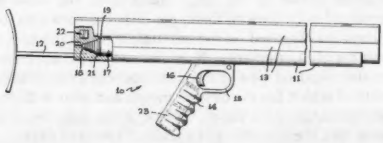
WEAPON

Alferd H. Crouch, 2502 Arizona Ave., #3, Santa Monica, Calif. 90404

Filed May 7, 1979, Ser. No. 36,414

Int. Cl.[3] F41C *19/12*

U.S. Cl. 42—84 **6 Claims**



1. A hand held weapon comprising the combination of:

a stock;

at least one barrel carried on said stock;

an ammunition load insertably carried in said barrel;

said ammunition load having a plurality of firing chambers, each holding a quantity of a powder charge, wadding and missile respectively;

a detonation plate separating each firing chamber from its adjacent firing chamber;

said ammunition load further includes recoil means adjacent each of said detonation plates for absorbing recoil shocks upon ignition of powder immediately ahead thereof;

electronic means cooperatively carried on said stock and said ammunition load for selectively firing or igniting each of said powder charges in each of the firing chambers;

said electronic means includes a plurality of conductors embedded in said ammunition load and in registry with a second plurality of conductors embedded in said stock;

a sequence control means coupled to said second plurality of conductors for selectively igniting said firing chamber powder charges;

a trigger mechanism and power source operably coupled together in series with said conductors to energize said sequence control means; and

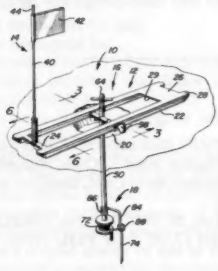
said recoil means includes a plurality of tabs extending into each of said firing chambers of said ammunition load to terminate immediately behind said detonation plate in an adjacent firing chamber.

4,285,154

TIP-UP FLAG DEVICE FOR ICE FISHING

Paul F. Grahl, Rte. 1, Eden, Wis. 53019

Filed Sep. 24, 1979, Ser. No. 77,935
Int. Cl.³ A01K *97/01*
U.S. Cl. 43—17 **4 Claims**



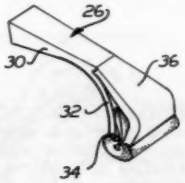
1. An ice fishing signalling device comprising an elongated base frame adapted to rest on an ice surface in transverse relation to a hole therein, an upwardly extending signalling device mounted on said frame for movement between an upstanding signalling position and a position adjacent the upper surface of the frame, and means mounted on said frame releasably retaining said signal device in its position adjacent the upper surface of the frame, said retaining means comprising a generally vertically disposed drive shaft rotatably supported from the frame, a spool on the lower end of the drive shaft having a fishing line wound thereon, a guide associated with the spool and receiving the line so that a fish moving the fishing line outwardly will rotate the drive shaft, means vertically adjustably supporting the drive shaft from the frame for pivotal movement about a transverse axis, and a transverse tripping member on the upper end of the shaft and adapted to receive the signalling device thereunder when the signalling device is disposed in its position adjacent the upper surface of the frame and releasing the signalling device upon rotation of the drive shaft, said guide for the fishing line including a loop having an extent greater than one convolution and having a free end enabling the fishing line to be placed therein but preventing the fishing line from floating out of the loop, said means supporting the drive shaft including a vertical tube, a transverse center shaft on said frame and receiving said tube to enable the tube, drive shaft, tripping member and spool to pivot to a collapsed position generally coextensive with the elongated frame to enable the device to be transported and stored in a compact condition, said frame being provided with a hollow central portion defined by a pair of frame rails with the shaft supporting the tube extending between the rails and adjustably secured therebetween, said frame rails being of substantially V-shaped configuration to enable the frame to be lifted from the ice even though the lower edges thereof may be frozen into the ice.

4,285,155

TOY SHAVING SET FOR A DOLL

J. Stephen Lewis, Pacific Palisades, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 22, 1979, Ser. No. 87,591
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—1 R **1 Claim**



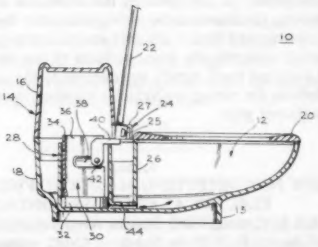
1. A toy razor comprising a handle, a first arcuate member connected to the handle, a second member adapted to mate with the first arcuate member to provide a holder, means adapted to rotate one end of the second member about the end of the first arcuate member opposite the handle, means for latching the second member to the first member, and a cellular sponge held between the first and second members to project therefrom.

4,285,156

TOY TOILET

Gerard K. Leistikow, San Pedro, and Henry R. Hales, Hawthorne, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 1, 1980, Ser. No. 117,694
Int. Cl.³ A63H *3/52, 33/00*
U.S. Cl. 46—14 **2 Claims**



1. A toy toilet comprising:

a bowl formed to simulate the bowl of a working toilet;

a seat mounted to the upper surface of the bowl;

a cover for the seat;

means rotatably connecting the cover above the seat, including means for hinging the cover to the bowl;

a reservoir mounted to the rear surface of the bowl and including upper and lower chambers wherein the upper chamber extends behind and above the upper surface of the bowl to simulate the water tank of a working toilet;

a cylinder positioned in the lower chamber of the reservoir;

a liquid conduit from one end of the cylinder to the bowl;

a piston adapted to fit in the cylinder to form a liquid tight

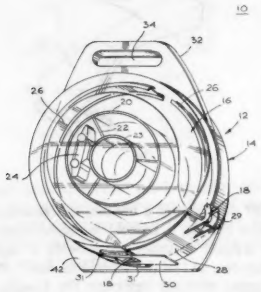
seal therewith; and means for moving the piston including a linkage from the cover to the piston which moves when the cover is rotated and which forces liquid from the chambers of the reservoir into the bowl to simulate the flushing action of a working toilet when the cover is opened, and which returns liquid from the bowl to the chambers of the reservoir when the cover is closed.

4,285,157

TOY RACING SET

Gerard L. Lambert, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 10, 1980, Ser. No. 110,974
Int. Cl.³ A63H *33/00, 11/10;* **E01B** *23/00;* **B65D** *69/00*
U.S. Cl. 46—202 **3 Claims**



1. A track layout for toy vehicles, comprising: two halves hinged together, each of the halves formed having an open end, a closed end, a wall having a cylindrical inner surface which surrounds the inner surface of the closed end, a segment of the wall being interrupted to form a gap in the wall; and means for hinging together the two halves which permits the halves to be folded together so that the open ends abut each other to cause the walls to form a cylindrical enclosure, and the gaps align with each other to form an opening into the enclosure, whereby the inner surfaces of the walls provide a first track, enclosed by the closed ends of each of the halves, for racing toy vehicles which are admitted into the interior of the enclosure via the opening, the means for hinging further permitting the halves to be unfolded so that their closed ends are coplanar and their walls abut such that the gaps in each are adjacent, whereby the inner surfaces of the closed ends provide a second track, totally surrounded by the walls of each of the halves, for racing toy vehicles between the two halves via the adjacent gaps.

4,285,158

TOY FOR DETECTING MAGNETIC FIELDS WITH ELECTRICAL COMPASS CONTACTS

Randall L. Courts, 18802 Dundee Ave., Saratoga, Calif. 95070, and Joseph R. Wilfong, San Jose, Calif., assignors to Randall L. Courts, Saratoga, Calif.

Filed Jul. 30, 1979, Ser. No. 62,245
Int. Cl.³ A63H *33/26;* **G01C** *17/02*
U.S. Cl. 46—227 **6 Claims**

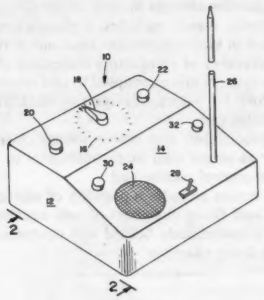
1. A toy, comprising:

(a) a housing;

(b) a compass having a magnetic pivotal needle and being mounted on said housing;

(c) first and second energizable means for generating first signals, and third energizable means for generating a second signal different from said first signals, each of said first, second and third energizable means being mounted on said housing; and

(d) electronic circuit means having a first contact and a second contact for energizing, respectively, said first energizable means and second energizable means in response to said needle being pivoted in one or another direction to close said first contact or said second contact, means for energizing said third energizable means in response to energization of said first energizable means or said second energizable means, testing means for energizing said first, said second and said third energizable means without said needle closing said first contact or said second contact, and reset means for deenergizing said first, said second and said third energizable means.

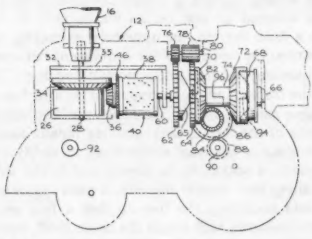


4,285,159

DIRECTION REVERSING CRIB TOY

Sidney Bass, Los Angeles; John S. Cook, Redondo Beach, and Herbert May, Torrance, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 25, 1980, Ser. No. 124,372
Int. Cl.³ A63H *17/36, 5/00;* **F16D** *19/00, 11/06*
U.S. Cl. 46—262 **4 Claims**



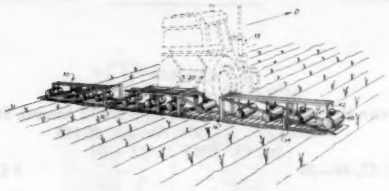
1. A crib toy comprising an outer shell, a reversing mechanism housed in the shell, and means driven by the mechanism for moving the toy along a crib rail, wherein the reversing mechanism comprises a motor, a first cam surface rotated by the motor, a second cam surface rotated by the motor, a shaft, first and second gears positioned to rotate with the shaft, a first cam follower positioned adjacent the first cam surface and adapted to move the shaft, a second cam follower positioned adjacent the second cam surface and adapted to move the shaft, an output gear adapted to engage the second and third gears in different positions of the shaft, the output gear being connected to drive the means for moving the toy along a crib rail, and means for rotating the first and second cam surfaces at a different speed than the first and second cam followers.

4,285,160

ANGLE ROPE WEED KILLER

Joseph J. Barton, and Bobby G. Boyd, both of P.O. Box 341, Hale Center, Tex. 79041

Filed Sep. 4, 1979, Ser. No. 72,301
Int. Cl.³ A01M *21/00*; A01N *5/00*
U.S. Cl. 47—1.5 **9 Claims**



1. In a wet rope applicator for applying herbicides to weeds comprising in combination:

a. a loose woven synthetic rope having two ends,

b. one end of the rope telescoped in one tube and

c. the other end of the rope telescoped in another tube,

d. seal means on each of the tubes and rope for sealing the rope and tubes,

e. supply means connected to each tube for supplying liquid herbicide under pressure to said tubes and thus pressure feeding said rope,

f. a frame having

(i) a front horizontal bar and

(ii) a back horizontal bar,

g. vehicle means on the frame for supporting and moving in an application direction said frame along the land to which the herbicide is to be applied,

h. a series of pairs of first and second headers on the frame for carrying herbicide,

i. a parallel group of said ropes, each of said ropes extending from one of said tubes in the first header to one of said tubes in said second header, of each pair,

j. a series of double outlet reservoirs of liquid herbicide

k. each of said double outlet reservoirs fluidly connected to a first and a second header of one of said pairs,

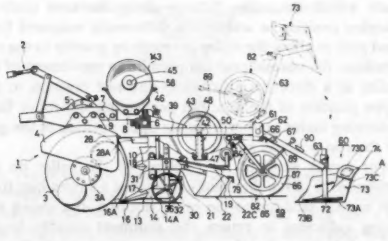
l. mounting means on each of the reservoirs for mounting the reservoir at an adjustable distance above the headers to which it is connected.

4,285,161

MULCHER

Masami Kawasaki; Toschimi Ohtori, both of Sakai; Kunisuke Sukigara, and Mitsuo Satoh, both of Okazaki, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Mar. 20, 1980, Ser. No. 132,122
Claims priority, application Japan, Apr. 3, 1979, 54-40742
Int. Cl.³ A01G *7/00*
U.S. Cl. 47—9 **16 Claims**



1. A mulcher for laying down a strip of film over a ridge longitudinally thereof and covering the laid-down strip with soil comprising:

means for rollably horizontally supporting a roll of the strip transversely of the direction of advance of the mulcher,

at least one pair of strip pressing means for pressing the strip longitudinally thereof on its opposite side portions, pulling out the strip from the roll and laying down the strip over the ridge, and

at least one pair of soil applying means for covering the laid-down strip with soil on its opposite sides longitudinally thereof,

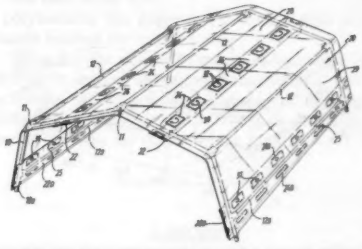
the strip roll supporting means comprising a support portion for rollably supporting the strip roll and restraining portions for restraining the strip roll from moving forward or backward while the strip roll is rolling to permit the strip to be pulled out from a definite position.

4,285,162

HORTICULTURAL ENCLOSURES

William J. Hilton, Ashby-de-la-Zouch, England, assignor to Bonas Brothers Limited, Staffordshire, England

Filed Apr. 7, 1980, Ser. No. 137,575
Claims priority, application United Kingdom, Apr. 7, 1979, 12307/79; Oct. 20, 1979, 36472/79
Int. Cl.³ A01G *13/04*
U.S. Cl. 47—29 **17 Claims**



1. A horticultural enclosure comprising a tubular frame, a cover of plastics material fitted on the frame, a plurality of slits in the cover, each slit defining a flap, the cover being tensioned by the frame such that the flaps are normally closed but such that they will be opened by the weight of rain on the cover to admit rain within the enclosure and opened when the enclosure is heated to admit air within the enclosure.

4,285,163

COLLAPSIBLE GROWING PLANT ENCLOSURE

William G. Booker, Jr., 217 - 4th Ave., Pleasant Grove, Ala. 35127

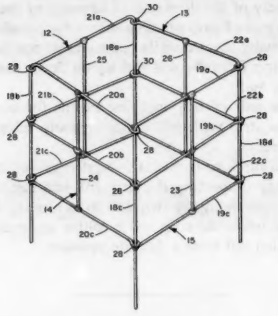
Filed Apr. 8, 1980, Ser. No. 138,561
Int. Cl.³ A01G *9/12*
U.S. Cl. 47—45 **4 Claims**

1. A collapsible protective enclosure for growing plants comprising:

four adjacent hinge-connected screens forming a four sided enclosure, each of said screens comprising at least two vertical members rigidly fastened to at least three horizontal members, said horizontal members terminating in hinges formed of a hook around a vertical member of an adjacent screen;

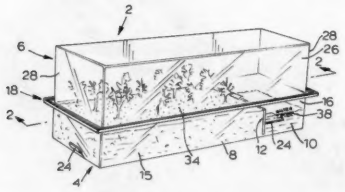
a first pair of adjacent screens of said enclosure having a

width less than the width of the remaining pair of adjacent screens, whereby said first pair of screens may be folded



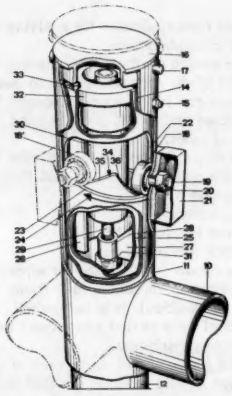
towards the interior surface of said remaining pair of screens permitting the collapse of said enclosure.

4,285,164
SELF-WATERING PLANTER
William A. Moore, Brandon, Canada, assignor to A. E. McKenzie Co. Ltd., Brandon, Canada
Filed Jul. 30, 1979, Ser. No. 62,215
Int. Cl.[3] A01G *9/16, 9/24*
U.S. Cl. 47—69 **3 Claims**



1. A self-watering portable planter of a thin plastics material comprising: a base having a first watertight compartment for holding growing medium and a second watertight compartment for holding water, each compartment comprising a side wall and a bottom, said side wall of each base compartment sloping upwardly and outwardly from said bottom, said compartments being located side by side and being separated by a divider wall therebetween, said divider wall extending the entire length of the junction between said compartments, said divider wall being of inverted V-shaped construction and comprising a portion of said side wall of each base compartment, said portions being joined together at their upper edges, said base having a continuous upper outer rim encircling said first and second compartments, a wicking material extending from the bottom of the second base compartment over the divider wall and substantially along the length of the bottom of the first base compartment, said second watertight compartment comprising a water level marking, said water level marking being located above the bottom of said second base compartment but substantially below the top thereof, a cover substantially identical with said base and thereby also having first and second watertight compartments each having a top and a side wall sloping downwardly and outwardly from said top, said first and second compartments of said cover being side by side and separated by a V-shaped divider wall therebetween, said cover having a continuous lower rim, said cover being seatable on said base with said rims in substantially airtight contact and with said first compartment of said cover located over said first compartment of said base and with said second compartment of said cover located over said second compartment of said base, said divider walls of said base and cover defining a space between them when said rims of said cover and base are seated on each other so that the space between said first compartments communicates with the space between said second compartment, said cover and base being nestable one within the other.

4,285,165
ARRANGEMENT IN A GATE
Torsten H. Persson, Froarpsvägen 36, S-290 72 Asarum, Sweden
Filed Jun. 21, 1979, Ser. No. 80,118
Int. Cl.[3] E05F *15/20, 1/04*
U.S. Cl. 49—30 **5 Claims**



1. A combination of (a) a swingable gate which has a normally closed or rest position and an open position and (b) a supporting post on which the gate is operably mounted for both pivoting and vertical displacement which is characterized by:

a roller attached to the gate and supported by a stationary cam track on the post; the cam track having a slope from a lowermost point, which determines and thus coincides with a rest position of the gate corresponding to the closed position, to continuously higher points on at least one side of the lowermost point and along a path which the roller follows when the gate is moved from the open position to the closed or rest position; the slope being of sufficient magnitude so that the roller rolls down the cam track by gravity to return the gate from the open position to the closed position;

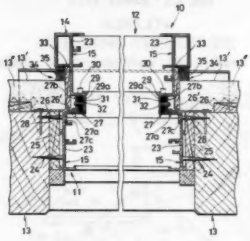
an abutment which is movable from a normal position in the path which the roller follows along the cam track to another position in which it is sufficiently removed from said path to allow the roller to return by gravity to the rest position, the normal position permitting movement of the roller in a direction away from the rest position to the open position of the gate but preventing the roller from returning under gravity from the open position of the gate to the rest position and;

damper means actuated by pressure of the roller on the abutment to move the abutment against a spring bias from the normal position to the other position, the spring bias being sufficient to return the abutment rapidly to the normal position after the roller passes thereover to the rest position.

4,285,166
DUAL WINDOW ASSEMBLY

Kinji Ishida, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 17, 1979, Ser. No. 67,408
Claims priority, application Japan, Sep. 4, 1978, 53-121418[U]; Sep. 6, 1978, 53-122353[U]
Int. Cl.³ E06B *7/00*
U.S. Cl. 49—63 **21 Claims**



1. A dual window assembly for covering an opening in in a building wall having an exterior siding, said dual window assembly comprising, in combination:

(a) an interior window unit including a first rectangular frame supporting a first pair of sashes, said frame being adapted to be disposed in the wall opening and having means by which it may, by a first set of fasteners, be secured to and supported by the wall, and further having a first mounting flange composed of vertical portions integral with the four sides of said first frame;

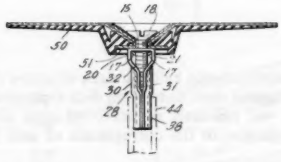
(b) an exterior window unit including a second rectangular frame supporting a second pair of sashes, said second frame being adapted to project into the wall opening from the exterior while extending outwardly beyond the siding, the inner portion of such inward projection comprising a second mounting flange composed of port integral with the four sides of said second frame, and disposed adjacent to but spaced from said first mounting flange; and

(c) a connector having a first section held against said first mounting flange by said first set of fasteners, and a second section secured to said second mounting flange by a second set of fasteners, whereby said exterior window unit is supported by said interior window unit.

4,285,167
ARBOR FOR MOUNTING TOOLS IN A CHUCK

Robert B. Roth, New York, N.Y., assignor to Sandvik Coastal Inc., Fair Lawn, N.J.

Filed Dec. 7, 1979, Ser. No. 101,281
Int. Cl.³ B24B *23/02*; B24D *13/20*
U.S. Cl. 51—168 **17 Claims**



1. An arbor for supporting a tool to itself and for being received by a chuck of another object, said arbor comprising an upper wall for supporting a tool to said arbor and a pair of side wings bent substantially normally to said upper wall; said wings being substantially parallel to each other; said wings each having opposite lateral edges, respectively; said wings having respective end portions remote from said upper wall; said wings at said end portions being shaped so that each said lateral edge on each said wing extends toward a cooperating said lateral edge on the other said wing; at said end portions, said wings being further shaped so as together to form a structure of a profiled cross-section, which said structure is engageable by a chuck.

4,285,168
FIBER LUBRICATED BEARINGS

Howard A. Scheetz, Lancaster, Pa., assignor to The Polymer Corporation, Reading, Pa.

Filed Nov. 13, 1979, Ser. No. 93,695
Int. Cl.³ E05F *11/02*
U.S. Cl. 51—281 R **1 Claim**

1. A method of preparing a bearing surface comprising the steps of:

(1) dispersing about 0.5% to 10% by weight of oriented polytetrafluoroethylene fibers in a liquid monomer or precursor of a rigid polyurethane polymer;

a. the oriented fibers being characterized by tensile strengths in excess of 25,000 psi, elongations of at least ¼ inch, and aspect ratios (L/D) of at least 25 to 1;

b. the liquid monomer or precursor of a rigid polyurethane polymer being characterized in that the polymerization product will have a tensile strength between about 7,500 and 10,000 psi, and an elongation at break of less than about 15%;

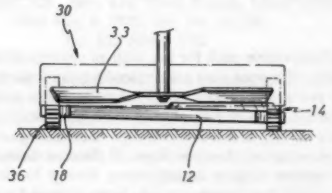
(2) polymerizing the dispersion to form a rigid polymeric matrix holding the oriented fibers;

(3) cutting into the polymeric matrix, as by turning, sawing, drilling or sanding to remove matrix material and expose a bearing surface having a plurality of fibers partially imbedded in the matrix with free ends extending out of and beyond the cut surface of the matrix.

4,285,169
METHOD OF USING VACUUM LIFTED BLADE SHARPENER FOR ROTARY MOWERS

Reginald T. Franklin, 714 Sherril, Orange, Tex. 77630

Filed Mar. 19, 1979, Ser. No. 21,889
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—288 **4 Claims**



1. A method of sharpening a blade of a rotary mower, comprising the steps of:

(a) placing a sharpening device on a level surface;

(b) positioning the rotary mower over the sharpening device;

(c) operating the mower at a sufficient speed to raise the sharpening device by vacuum force to sharpen the blade; and

(d) decreasing the speed of the mower to lower the sharpening device.

4,285,170

GRINDING OF KNIVES

Harold B. Bardsley, Euxton, Near Chorley, England, assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Apr. 4, 1980, Ser. No. 137,559

Claims priority, application United Kingdom, Apr. 11, 1979, 12827/79

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—288 **4 Claims**

1. A method of grinding the cutting edges of a plurality of spaced substantially parallel elongated tufting machine knife blades having a mounting portion carried in cantilever fashion in a common knife block, the cutting edges being on the free end of the blades oppositely disposed to the mounting portion, said method comprising locating the individual knife blades in a predetermined spaced relative disposition, collectively deflecting the blades laterally while maintaining the spaced disposition to bring the free ends substantially into a common plane, grinding the free ends into conformity with said common plane, and releasing the deflection from the blades.

4,285,171

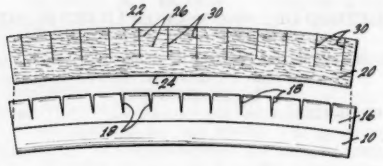
ABRASIVE FLAP DRUM

Aleck Block, Los Angeles, and Hiroshi Hasegawa, Whittier, both of Calif., assignors to Merit Abrasive Products, Inc., Compton, Calif.

Filed Apr. 16, 1979, Ser. No. 30,331

Int. Cl.³ B24D *13/04*

U.S. Cl. 51—337 **23 Claims**



1. An abrasive pack for use with an elongated hub having a plurality of spaced slots each extending along the length of the drum and with a plurality of the abrasive packs each extending outwardly from the drum and each positioned adjacent an individual one of the slots, each pack including

a plurality of abrasive flaps of abrasive material stacked together to form a pack;

an attachment member means having an end portion and a loop portion;

a supporting strip positioned adjacent the sides of the end portion of the attachment member to support and retain the end portion;

the supporting strip including a plurality of slits located periodically along the length of the strip and with each slit extending partially along the height of the strip for increasing the flexibility of the strip to bending and twisting, and

the supporting strip and the end portion disposed between individual flaps in the pack and with the loop portion without the pack for reception within an individual one of the slots for locking the loop portion within the slot.

4,285,172

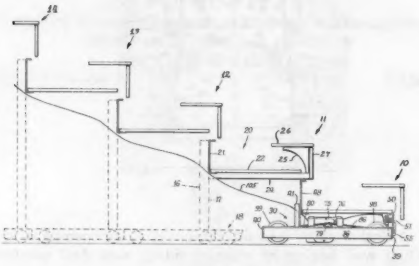
POWER DRIVE APPARATUS FOR TELESCOPIC SEATING SYSTEM

Robert E. Quigley, Seymour, Ill., assignor to American Seating Company, Grand Rapids, Mich.

Filed Sep. 4, 1979, Ser. No. 71,925

Int. Cl.³ E04H *3/12*

U.S. Cl. 52—10 **8 Claims**



1. Friction drive apparatus for a telescopic seating system having a plurality of rows adapted for movement between an extended position in which the rows are in stepped relation and a retracted position in which the rows are substantially vertically aligned, comprising: a frame; a motor carried by said frame; means for mounting said frame to one row of said system; first and second rollers mounted to said frame for rotation about respective forward and rear horizontal axes extending transverse of the direction of movement of said rows between said positions, each roller having an axial extension greater than its radius and an outer surface of resilient friction material; and positive drive means for connecting said rollers to said motor for being driven thereby.

4,285,173

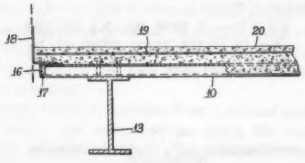
BUILDING DECK STRUCTURE

Kenneth R. Grearson, Park Ridge, and Robert Watson, Jr., Woodstock, both of Ill., assignors to Multuloc Corporation, Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 107,033

Int. Cl.³ E04C *2/26, 2/32*

U.S. Cl. 52—73 **18 Claims**



1. In a poured concrete building deck structure of the type having a corrugated sheet metal form deck supported by structural girders and spandrels an improved edge construction along edges parallel to the corrugations of said form deck comprising:

an edge open trough of said corrugated sheet metal form deck being spaced from the desired building line or opening, a beam support between said edge open trough and said desired building line or opening;

a corrugated sheet metal form having corrugations at about 90° to the major portion of said corrugated sheet metal form deck having its inner end supported by said edge

open trough of said corrugated sheet metal form deck and extending over said beam support in cantilever fashion and having its outer end which is perpendicular to its corrugations spaced a distance corresponding to the adjustability of an edge bracket from the desired building line or opening; and

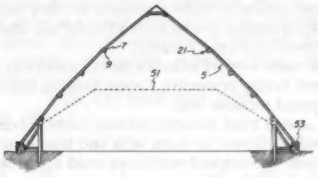
an edge bracket fastened to said outer end extending outwardly to the desired relationship to the building or opening and providing means to retain poured concrete.

4,285,174

BUILDING STRUCTURE

Brian V. Knight, 8 Pleasantview Ave., New Hartford, N.Y. 13413

Filed Nov. 23, 1979, Ser. No. 97,713
Int. Cl.³ F04B *1/32*
U.S. Cl. 52—81 **9 Claims**



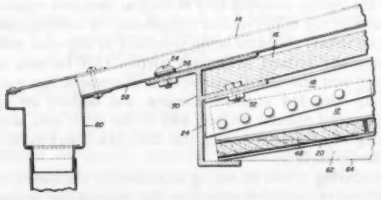
1. A trapezoidal-shaped panel for use with a frustum of a free-standing building structure of variable profile, said frustum being, in and of itself, an independent and self-supporting structure, said building structure having a plurality of frustums, each of said frustums having a plurality of said trapezoidal-shaped panels joined together, each of the panels of a lowerdisposed frustum having a greater external surface area than a panel of the next succeeding upper-disposed frustum, each panel having a flat, outer or exterior skin and a superstructure of a bottom plate, top plate and lateral plates, said superstructure carrying said skin, each of said frustums having its panels joined together along and at their common lateral plates, said top plates of said panels of a lower-disposed frustum being joined to corresponding bottom plates of mating panels of such next succeeding upper-disposed frustum, and each of said top plates forming with its respective outer or exterior skin an interior angle greater than 90 degrees and with the interface plane of each of such joined-together top and bottom plates being disposed lying below and outside the horizontal plane of the building structure.

4,285,175

THERMALIZED AWNING

Francis L. Struben, and Jean C. Struben, both of 3870 Jarrettsville Pike, Jarrettsville, Md. 21084

Filed Aug. 17, 1979, Ser. No. 67,403
Int. Cl.³ E04D *3/24, 3/35;* **E04F** *10/00*
U.S. Cl. 52—90 **3 Claims**



1. A thermalized awning, comprising:

a framework, said framework consisting of a plurality of roof truss structures, said roof truss structures being spaced apart and set in an array, each said roof truss structure having a curved top chord and a straight bottom chord with struts and ties connecting said top and bottom chords together in a truss configuration, each said roof truss structure having a first end and a second end;

a support means for said framework, said support means consisting of a first support system and a second support system, said first support system consisting of a double "U" shaped channel means, said double "U" shaped channel means being affixed to said first end of each said roof truss structure along a first side of said array, said double "U" shaped channel means being affixed to and supported by an adjacent structure means at an elevation above the elevation of said second end of each said roof truss structure, said second support system consisting of an "E" shaped beam means, said "E" shaped beam means being affixed to said second end of each said roof truss structure along a second side of said array, said "E" shaped beam means being affixed to and supported by a plurality of post-like columns, the elevation of said "E" shaped beam being lower than said elevation of said double "U" shaped channel means, thereby causing said top chords of said plurality of roof truss structures to have a continuous descending slope toward said "E" shaped beam means;

a cover means over said framework, said cover means consisting of a plurality of panels configured in a flattened hill and valley contour, said panels having a first end and a second end, said first end of said panels being inserted in an uppermost "U" of said double "U" shaped channel means and being affixed therein, said second end of said panels being affixed to the uppermost surface of said "E" shaped beam with a short overhang;

an insulating means, said insulating means being rigid and of a flat sheet-like configuration, said insulating means having a first end and a second end, said insulating means being inserted between said cover means and said framework, said first end of said insulating means being inserted in the lowermost "U" of said double "U" shaped channel means, said second end of said insulating means being inserted in the uppermost opening of said "E" shaped beam means, said insulating means having a continuous air space between the upper surface thereof and the underside of said cover means, and a continuous air space between the underside of said insulating means and the topmost side of each said roof truss structure, said air spaces providing a blocking means to the transmission of heat and cold by conduction.

4,285,176

SHELTER TRUSS

Paul S. Runkle, 323 - 90th Ave. West, Duluth, Minn. 55806

Filed Aug. 6, 1979, Ser. No. 63,788
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—93 **14 Claims**

1. A unitary structural skeleton for a building which defines the entire shape of that building consisting in:

(a) a plurality of upright trapezoidal shelter trusses of the same dimensions and constructed and arranged in spaced parallel relation, each of said trusses comprising:

(1) a pair of spaced parallel rigid upright members of different lengths, each having upper and lower end portions, intermediate portions, and outer edge portions;

(2) each of said upright members being comprised of a pair of elongated laminates having inner and outer surfaces and being of equal widths at their upper and lower ends;

(3) said inner surfaces of each of said laminates being recessed at each of the upper ends of said laminates to accommodate a rafter therebetween;

(4) a rafter extending between said members and being glued at each of its ends within said recesses and to said laminates and extending flush with the ends of said laminates;

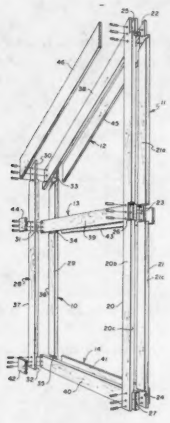
(5) said inner surfaces of each of said laminates also being recessed in juxtaposed position at a point intermediate the ends of said members to accommodate a joist therebetween;

(6) a joist extending horizontally between said members and being glued at each of its ends within said second mentioned recesses and to said laminates;

(7) each of said pairs of said laminates having their outer edge portions recessed at their upper ends and directly opposite the associated end of said rafter to accommodate and receive a horizontal tie member therein in order to tie said shelter truss to other and similar shelter trusses;

(8) the ends of said rafter being flush with its said associated recessed surfaces of said laminates;

(9) each of said pairs of laminates having their inner surfaces glued only to each other and having only their



outer edge portions recessed at a point opposite the ends of said joist to accommodate and receive a horizontal tie member therein in order to tie said shelter truss to other and similar shelter trusses;

(10) the ends of said joist being flush with its said associated recessed surfaces of said laminates;

(b) a pair of horizontal tie plates, one each of which is connected to and positioned within the corresponding recessed edge portions of said upper ends of each of said pairs of laminates and extending flush with said edge portions and tieing said shelter trusses together; and

(c) a second pair of horizontal tie plates, one each of which is positioned within and connected to the corresponding recessed portions of each of said pairs of laminates opposite the ends of said joists and extending flush with said edge portions of said laminates and cooperatively tieing said shelter trusses together into a structural skeleton.

4,285,177

REINFORCED TREAD ASSEMBLY

Glen A. Seegers, Wheaton, Ill., assignor to American Stair Corporation, Inc., Willow Springs, Ill.

Filed Jan. 7, 1980, Ser. No. 110,345

Int. Cl.³ E04F *11/12*; B44D *5/08*

U.S. Cl. 52—179 **10 Claims**

1. A lightweight, reinforced concrete tread assembly for a stairway, comprising

a tread member formed of a glass reinforced concrete material,

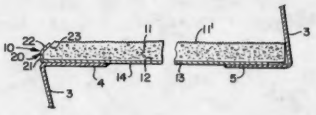
said tread member having an upper face forming an upper tread surface, a front surface and an underside face,

base means having a base member coupled in a laminated relationship to at least a portion of the underside of said tread member,

said base member acting to reinforce said tread member and to render said tread member more impermeable and resistant to impact and forming a composite strengthened tread assembly in conjunction with said tread member,

means for bonding said base member to said tread member to form said composite strengthened tread assembly,

said base means including a nose section integrally coupled to said base member in a continuous relationship,



said nose section extending upward in close proximity to said front surface to a location adjacent said upper surface to protect said tread member,

a pair of risers forming at least a part of a stairway structure,

said risers having respective flanges forming aligned spaced horizontal surfaces, and

said laminated tread member and base member being carried on said horizontal surfaces with said base member being disposed between said reinforced tread and at least one of said horizontal surfaces.

4,285,178

SELF-SUPPORTING STAIRCASE WITH CENTER POST CONSISTING OF INDIVIDUAL STRUCTURAL ELEMENTS

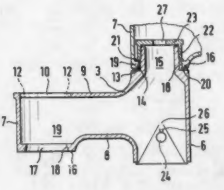
Günter Holzkampfer, Sachsenhain 8, 3000 Hannover 51/BRD, and Hans-Reiner Eilers, Mozartstrasse 5, 3000 Hannover 1/BRD, both of Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 22,996

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813199

Int. Cl.³ E04F *11/00*

U.S. Cl. 52—187 **9 Claims**



1. In a self-supporting staircase having a center post consisting of a plurality of individual interconnected structural elements, each structural element having a tread, an interior and means for tightly securing said structural elements relative to one another, the improvement comprising, in combination:

said structural elements being provided, at one end, with an integrally formed projected portion that extends away from said one end of said structural element, has a externally threaded segment thereon and defines an upper horizontal annular surface, and, at the other end, with an integrally formed opening that defines a lower horizontal annular surface;

said securing means including an internally thereaded member and being characterized in that, when a first structural elelment is assembled in conjunction with an adjacent structural element, said integrally formed projecting portion of the first structural element is positioned such that said externally threaded segment thereon extends through

the opening of the adjacent structural element and the upper horizontal annular surface of the first structural element abuts the lower horizontal annular surface of the adjacent structural element defining an interface therebetween, said internally threaded member screwing onto said externally threaded segment and thereby securing the individual structural elements and their respective upper and lower horizontal annular surfaces relative to one another, and directing substantially all stress forces between adjacent structural members to be transmitted through the interface defined by said upper and said lower horizontal annular surfaces.

4,285,179

PLATE SHAPED PREFABRICATED GUILDING ELEMENT AND A PROCESS FOR THE PRODUCTION OF WALLS BY USING THESE ELEMENTS

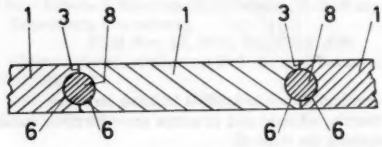
Johann Goidinger, A-6511 Zams, Hinterfeldweg 8, Austria

Continuation-in-part of Ser. No. 892,875, Mar. 31, 1978, abandoned, which is a continuation of Ser. No. 621,045, Oct. 9, 1975, abandoned. This application Nov. 1, 1979, Ser. No. 90,256

Claims priority, application Austria, Mar. 10, 1975, NoA1850/75

Int. Cl.³ E04B *2/24, 2/26*

U.S. Cl. 52—309.12 **22 Claims**



10. A substantially crack-free load-bearing wall, comprising a plurality of substantially rectangular pre-fabricated building elements of light-weight concrete having a modulus of elasticity less than 8000 kg/cm^2 which have been previously shrunk by steam-hardening or storage, said elements having a lengthwise groove formed in each of their longitudinal side edges, said elements further being arranged side-by-side so that the longitudinal side edges of adjacent elements are in abutting relationship and said grooves form vertical channels between adjacent elements, said channels being filled with heavy concrete to provide a tensile-resistant bond between adjacent elements and to form pillars in said channels which carry the major part of a load applied to said wall, said previous shrinkage of said pre-fabricated elements being such that the residual shrinkage of the elements is accommodated by creep occurring in the elements and by elastic expansion thereof.

4,285,180

WATERSTOPS

Kevin Hinton, Hitchin, England, and Martin S. Barnes, Pittsford, N.Y., assignors to Schlegel (UK) Ltd., England

Filed Mar. 27, 1979, Ser. No. 24,494

Int. Cl.³ E01C *11/04*

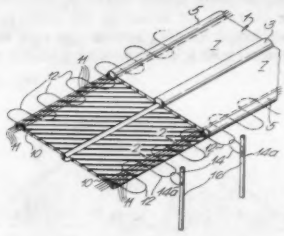
U.S. Cl. 52—396 **12 Claims**

1. A waterstop, comprising:

a body of resilient material;

integral supporting members which have inner portions embedded in the body of said waterstop and outer portions extending laterally from both longitudinal side edges of the waterstop, said outer portions being in the form of spaced loops lying substantially in the plane of the waterstop; and,

a plurality of longitudinal stiffening strands embedded in and extending lengthwise of the waterstop adjacent each of



the side edges, said stiffening strands being in contact with said inner portions of said loops.

4,285,181

BUILDING PLANKS AND/OR METHODS AND/OR APPARATUS FOR MAKING THE SAME

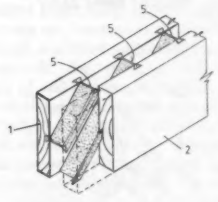
Johannes J. Van Loghem, and Johannes La Grouw, both of Russell Rd., Rotorua, New Zealand

Filed Dec. 7, 1978, Ser. No. 967,117

Claims priority, application New Zealand, Dec. 15, 1977, 185995

Int. Cl.³ E04B *1/74*

U.S. Cl. 52—404 **1 Claim**



1. In a building plank comprised of two spaced apart substantially parallel timber facing members, a plurality of transverse web members between said facing members connected to said timber members by said web members having dovetail edges engaging within cooperating dovetail slots on the interior faces of said timber members, and insulating material between said timber members, the improvement comprising said web members being arranged at an angle with the ends of adjacent web members overlapping so that web contact with the facing members is substantially continuous over the length of the plank, said web members are made of a plastic material and comprise opposite longitudinal members having said dovetail edges and a plurality of spaced transverse members between said longitudinal members, said insulating material being in situ foamed material.

4,285,182

CONCEALED FASTENER PANEL CONSTRUCTION AND METHOD OF INSTALLATION

Kenneth N. Dinges, Tulsa, Okla., assignor to Braden Steel Corporation, Tulsa, Okla.

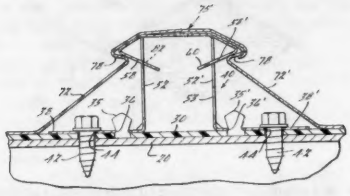
Filed Apr. 5, 1979, Ser. No. 27,289

Int. Cl.³ E04B *1/40;* E04D *3/361*

U.S. Cl. 52—478 **16 Claims**

1. Securing means for the panels of a building panel structure comprising elongated relatively thin flat locating strips having coupling portions at their ends for assembling a plurality of such strips to a desired length, said strips being adapted to be installed in end to end relation lengthwise upon an elongated

building frmae member, clip locating portions on surface portions of said strips which remain exposed when the strips are so installed, said clip locating portions being arranged at standardized longitudinally spaced distances, panel holding clips having base portions for attaching the same to supporting structure, additional locating portions on said base portions adapted to interfit with said clip locating portions on the locating strips, fastener-receiving portions on the base portions adapted for securance to an underlying building frame member by fastening means extending through such base portions and through the underlying locating strips and into the building frame member, and flexible latching means on said clips adapted for interengagement with coacting latching means on overlying panels.

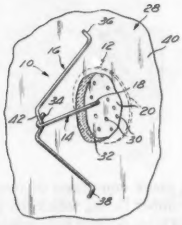


4,285,183

WALLBOARD PATCHING APPARATUS

Ernest M. Condit, 5210 Reedley Pl., Castro Valley, Calif. 94546

Filed Nov. 1, 1979, Ser. No. 90,413
Int. Cl.³ E04G 23/02
U.S. Cl. 52—514 **5 Claims**



1. A wallboard patching apparatus comprising:

a sheet material base having a front operating face, said base being bendable to assume a substantially smaller size, when at rest said base assuming a substantially planar configuration, said front operating face of said base to receive a quantity of an adhesive adjacent the peripheral edge of said front operating face;

a lock pin removably attached to said base at said front operating face, said lock pin extending outwardly from said front operating face, the free end of said lock pin having a connecting means in the form of a hook;

a bridge member to connect with said connecting means, said bridge member comprising a substantially triangularly shaped wire rod, the apex of said wire rod including means to facilitate connecting to said hook, the outer ends of said bridge member to press against the wallboard which causes an outward force being applied to said lock pin which tightly holds said sheet material base in contact with the wallboard; and

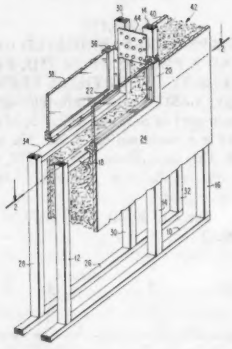
whereby said base with said adhesive applied and with the lock pin connected is to be deformed and inserted entirely through a hole in the wallboard, the base is then to be released and pressed against the inside wall surface of the wallboard with the adhesive located therebetween, the bridge member is then located between the outside surface of the wallboard and the connecting means to fix the location of the base, this situation is maintained until the adhesive dries, then the bridge member and lock pin are removed, the hole in the wallboard is now readily patchable with plaster or the like.

4,285,184

METHOD OF SOUND-PROOF WINDOW CONSTRUCTION FOR BUILDING STRUCTURES

Ralph L. Turner, Jr., 1235 Regency Pl., San Jose, Calif. 95129

Filed Sep. 4, 1979, Ser. No. 72,409
Int. Cl.³ E06B 1/04
U.S. Cl. 52—741 **4 Claims**



1. The method of constructing a building structure with a window therein, wherein said structure provides noise reduction, comprising the steps of:

(a) constructing a double-skinned wall comprised of outer sheathing supported by first vertical studs and inner sheathing supported by second vertical studs, which second studs are separate from said first studs supporting said outer sheathing, such that outer and inner structures are created of separate elements with a space therebetween;

(b) glazing a first window in an opening in said outer structure;

(c) glazing a second window in an opening in said inner structure, such that said second window is in tandem with said first window, and

(d) insulating said space between said inner and said outer structures with a sound-absorbing insulating material, such that said space provides a sound-absorbing cavity to sound waves impinging upon said first window.

4,285,185

ARTICLE CARRIER FEEDING AND CONTROL APPARATUS

Peter C. Collura, Los Altos, and Chester J. Pierce, Jr., Pioneer, both of Calif., assignors to Certipak Corporation, Greenwich, Conn.

Filed Aug. 29, 1979, Ser. No. 70,668
Int. Cl.³ B65B 21/24, 27/04
U.S. Cl. 53—48 **14 Claims**

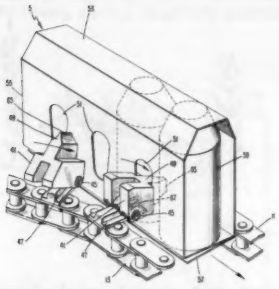
1. Apparatus for applying a wraparound carrier to a plurality of containers or the like, said carrier being initially partially wrapped around said containers, said carrier including at least two opposed openings formed on opposite sides thereof, comprising:

means for conveying said carrier and said containers;

a plurality of lug means, pivotally attached to and spaced apart along said conveyor means, said lug means including tongue portions adapted for insertion into said openings formed in said carrier; and

means for pivoting said lug means into contact with said carrier openings,

whereby said carrier is tightened and secured about said containers by said pivoting lug means while being conveyed;



said tongue portions of said lug means extending through said carrier openings sufficiently to separate and position said containers within said carrier.

4,285,186

DEVICE FOR POSITIONING PRINTED CAPS

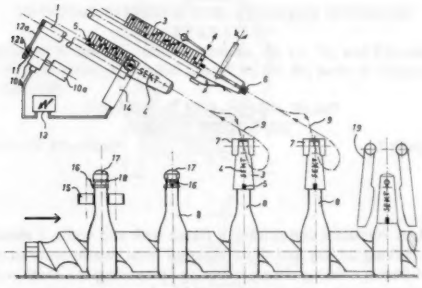
Albert Desom, 5, Route de Stadtbredimus, Remich sur Moselle-Luxemburg, Luxembourg

Filed Nov. 27, 1979, Ser. No. 97,636

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852192

Int. Cl.³ B65B *57/02, 7/28*

U.S. Cl. 53—64 **7 Claims**



1. A device for orientating and positioning printed container caps to be placed upon containers, said caps being provided with optical marks, said device comprising a cap gripping means, a pair of separated guide rod means extending parallel to each other at an angle to a horizontal plane for slidingly forwarding a stack of interengaged bottle caps supported thereon toward said cap gripping means arranged adjacent the lower end portions of said guide rod means for successively gripping the lowermost cap in the stack and placing same on said container, at least said lower end portions of said guide rod means being mounted for synchronous rotation around their longitudinal axes; a mark reading means arranged adjacent said lower end portions of said guide rod means for sensing the marks provided on the lowermost cap of the stack supported onto said guide rod means; a driving means for selectively rotating said portions of said guide rod means, and a switching means connected to said mark reading means and to said driving means for controlling selective rotation of said portions of said guide rod means, said switching means interrrupting said rotation when a lowermost cap of the stack is in a predetermined rotational position as sensed by said mark reading means.

4,285,187

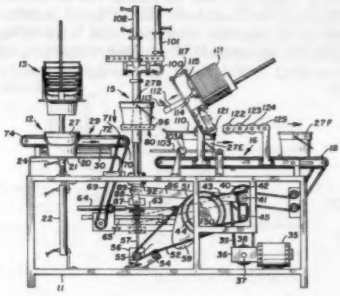
INTERMITTENT FEED MECHANISM FOR STACKED CONTAINERS

Gilmore T. Schjeldahl, 4436 Marlborough Ct., Minnetonka, Minn. 55343

Filed Oct. 31, 1979, Ser. No. 89,728

Int. Cl.³ B65B *3/04, 7/28*

U.S. Cl. 53—282 **8 Claims**



1. In a container handling and filling system for sequentially selecting, filling, and capping individual containers stored in a nested stack, with said containers each having upstanding walls, a base, and an upper rim, with said system including stacking means for retaining a generally vertical column of said containers in nested relationship therein, and means for intermittently delivering the lowermost container in said column onto a first, second, and third sequentially arranged container handling sub-systems for moving individual containers through portions of said handling and filling system;

(a) said first container handling sub-system including means for sequentially delivering individual containers from said nested stack and into a container filling station for filling thereof, and comprising a first endless web having a container gripping member secured thereto and being arranged for reciprocatory to-and-fro motion to transport individual containers upon removal from said nested stack to said second container handling sub-system at and along a base plane;

(b) said second container handling sub-system including vertically reciprocable pad means for intermittently raising individual containers from said base plane to an elevated disposition adjacent a filling spout for filling and for rotating said container while in said elevated disposition for a finite period from said spout and for returning said filled container to said base plane;

(c) said third container handling sub-system including second endless web means for receiving said filled container from said reciprocating pad and for removing said filled container through a capping station for applying and sealing a cap onto said filled container.

4,285,188

METHOD OF FILLING AND SEALING CONTAINERS

Clifton G. Morton, 4 Stella St., Holland, Queensland, Australia (4121)

Division of Ser. No. 963,610, Nov. 24, 1978, Pat. No. 4,220,254. This application Nov. 30, 1979, Ser. No. 98,872

Claims priority, application Australia, Nov. 25, 1977, PD2561

Int. Cl.³ B67B *1/04;* B65B *7/28*

U.S. Cl. 53—420 **8 Claims**

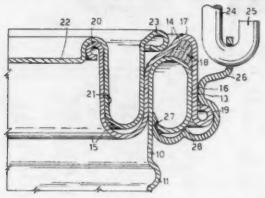
1. A method of handling, filling and sealing container assemblies for paint and other material, comprising the steps of:

(a) providing a container of substantially frusto-conical shape having a continuous side wall, a closed bottom and an outer annular bead formed at the top of said side wall,

the outer face of said bead being spaced substantially from the plane of said side wall, the frusto-conical shape of said container permitting interfitting of a plurality of containers;

(b) providing a top ring which can be shipped separately from said container and applied thereto after the container is filled, said top ring having an outer inverted channel adapted to extend around the bead of the container but spaced from the top thereof to form a space into which sealing compound can be placed before the top ring is secured to the container, and an inner annular channel open at its top, the respective side walls of said inner channel being substantially spaced from one another;

(c) providing a friction-fit lid having an annular down-



wardly turned peripheral channel adapted to extend into and be frictionally retained by said inner channel of the top ring;

(d) separately stacking a plurality of containers provided by step (a) for storage and transportation purposes wherein each respective frusto-conical container is interfitted one with another;

(e) transporting the stacked containers to a material filling station;

(f) transporting said top rings and lids to said filling station;

(g) unstacking the containers and filling each container with paint or other material and,

(h) applying said top ring and lid to each filled container whereby the top ring is secured and sealed to the bead of said container.

4,285,189

TOBACCO HARVESTER

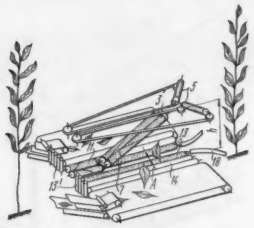
Anatoly P. Mikhailov, ulitsa Moskovskaya, 52, kv. 40, Krasnodar; Petr F. Tomarovsky, sovkhoz "Alma- Atinsky", ulitsa Dokuchaeva, 7, Alma-Atinskaya oblast; Arstan S. Mukanov, ulitsa Kalinina, 77, kv. 11, Alma-Ata; Alexandr N. Soloviev, ulitsa Proletarskaya, 94, kv. 67, Alma-Ata; Evgeny A. Kononov, ulitsa M. Gorkogo, 149, kv. 117, Alma-Ata; Alexandr P. Zhukov, ulitsa Kosmonavtov, 96/1, kv. 31, Alma-Ata; Ivan P. Leonov, ulitsa Kirova, 60, kv. 12, Krasnodar; Shavarsh M. Grigorian, ulitsa 4 Gastello, 6/40, Erevan; Vladislav K. Novinsky, Rostovskoe shosse, 8/67, Krasnodar; Jury I. Rabotkin, proezd Stroitelny, 37, Krasnodar; Igor B. Poyarkov, ulitsa Voroshilova, 39, kv. 20, Krasnodar; Viktor P. Fedoseev, ulitsa Pushkina, 5/13, Krasnodarsky krai, poselok Oktyabrsky; Nikolai N. Shelukha, Abinsky pereulok, 12., Krasnodar; Amangeldy Utinchiev, ulitsa Saina, 94, kv. 14, Alma-Ata; Boris V. Chursin, ulitsa Kosmonavtov, 17, kv. 29, Alma-Ata; Dostan Kaliev, ulitsa Furmanova, 126, kv. 14., Alma-Ata, and Vladimir A. Ustich, ulitsa Krasnaya, 204, kv. 3, Krasnodar

Filed May 6, 1980, Ser. No. 147,246

Int. Cl.[3] A01D *45/16*

U.S. Cl. 56—27.5 **5 Claims**

1. A tobacco harvester comprising: a self-propelled chassis; a conveyer adapted for holding the tobacco stalk in a vertical position and mounted on said chassis, said conveyer being essentially made as two adjacent strands provided with elastic oppositely directed projections, said projections being spaced equidistantly over said conveyer strands, and the projections on one of the strands are offset by half the pitch with respect to the projections on the adjacent strand, the height of said projections, when in a free state, exceeding the distance between said conveyer strands; a means for lifting the drooping tobacco leaves mounted on said conveyer; a leaf stripper situated on said chassis under said conveyer, said stripper being made in the form of parallel drums provided with augers and



brushes set on the shafts of said drums, the diameter of each of said drums complete with the brushes exceeding the diameter of said auger of the drum; a means for withdrawing the severed tobacco leaves mounted on said chassis below said leaf stripper.

4,285,190

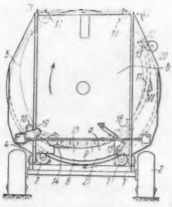
ROTOBALER

Vladimir G. Ermachkov, 8 mikroraion, 31, kv. 59, and Vladimir G. Zhavoronkin, 6 mikroraion, 1, kv. 69, both of Frunze, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,123

Int. Cl.[3] A01D *39/00*

U.S. Cl. 56—341 **6 Claims**



1. A rotobaler comprising: a frame with end walls; a means for picking up hay and straw material from swaths secured on said frame; a baling chamber having an opening in a front wall for loading the picked-up material and an opening in a rear wall for unloading a finished roll, and including a tube installed between the end walls of said frame in a direction parallel to the movement of the machine and rotatably secured on said frame for rotating about its own axis, an inside surface of said tube being provided with flutes; and a roller table movably installed inside of said tube relative to said baling chamber, outer surfaces of rollers of said roller table being provided with flutes.

4,285,191

QUICK STRANDING MACHINE

Günther Paulsen, Gingener Str. 22, 7000 Stuttgart 60, Fed. Rep. of Germany

PCT No. PCT/DE78/00041, § 371 Date Aug. 21, 1979, § 102(e) Date Aug. 20, 1979, PCT Pub. No. WO79/00414, PCT Pub. Date Jul. 12, 1979.

This PCT application filed Dec. 16, 1978, Ser. No. 129,281

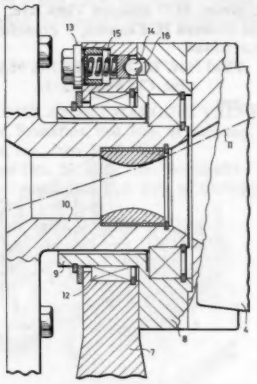
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756933

Int. Cl.[3] D07B *7/06, 3/02, 3/04*

U.S. Cl. 57—58.34 **9 Claims**

1. A high-speed stranding machine, comprising a hollow

rotor rotatable about an axis of rotation; at least one spool carrier arranged in said rotor independently of the rotation of said rotor; an unbalanced mass arranged to prevent rotation of said spool carrier together with the rotation of said rotor and formed as a counterweight, said spool carrier with a spool carried thereby having a center of gravity substantially coinciding with said axis of rotation of said rotor; and means for connecting said counterweight with said spool carrier so that said counterweight can independently rotate about said axis of rotation of said rotor, and can be disconnected from said spool carrier upon exceeding a predetermined torque value in said connecting means.

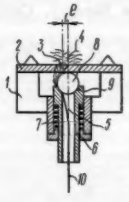


4,285,192

TWISTING MEMBER FOR RINGLESS SPINNING APPARATUS

Alexandr I. Saveliev, ulitsa Dybenko, 34, kv. 71, and Elizaveta A. Brezulova, 2 Donskoi proezd, 6, kv. 36, both of Moscow, U.S.S.R.

Filed Oct. 1, 1979, Ser. No. 80,447
Int. Cl.³ D01H *7/882*
U.S. Cl. 57—58.89 **5 Claims**



1. In a twisting member for use in connection with a ringless spinning apparatus, comprising:

a rotor adapted to be rotated about an axis of rotation;

a disc mounted on said rotor and having a duct formed therethrough through which fibres are adapted to pass exiting from an outlet thereof; a sleeve arranged coaxially along the axis of rotation of said rotor underlying a surface of said disc onto which the outlet of the duct opens, said sleeve being resiliently urged towards the disc surface; a ball accommodated between said disc and an end of said sleeve, said ball defining with said sleeve a means for resiliently clamping the thread being formed therebetween,

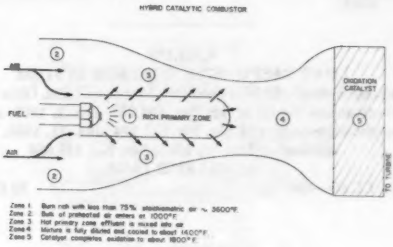
the improvement comprising: that the outlet of the duct of said disc is arranged eccentrically with respect to the axis of rotation of said rotor such that the outlet of the duct is laterally displaced from the region of the ball whereby no clamping action can be effected on the fibres between the disc and the ball.

4,285,193

MINIMIZING NO_x PRODUCTION IN OPERATION OF GAS TURBINE COMBUSTORS

Henry Shaw, Scotch Plains, and Alvin Skopp, Clark, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 825,030, Aug. 16, 1977, abandoned, which is a division of Ser. No. 664,621, Mar. 8, 1976, abandoned.
This application Oct. 24, 1978, Ser. No. 954,187
Int. Cl.³ F02C *7/00, 7/264*
U.S. Cl. 60—39.06 **2 Claims**



1. A method for combusting fuels in a gas turbine which comprises:

(a) partially combusting fuel with air within an open cannular combustor located within a primary, non-catalytic section of the combustor of said gas turbine to form a hot, partially burned effluent which emanates from an opening in said cannular combustor, the amount of air present within said cannular combustor varying from 50 to 70% of the stoichiometric requirements for complete combustion of said fuel;

(b) quenching said hot, partially burned effluent with additional air within said combustor without continued high temperature combustion, the amount of such additional air being sufficient to support the subsequent combustion of the partially burned fuel contained in said effluent; and

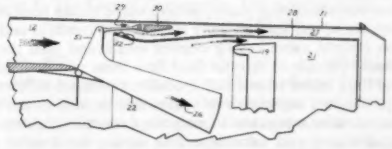
(c) passing said quenched effluent over an oxidation catalyst at a temperature above the catalyst light-off temperature to complete the combustion of said fuel.

4,285,194

APPARATUS AND METHOD FOR CONTROLLING FAN DUCT FLOW IN A GAS TURBINE ENGINE

Dudley O. Nash, Forest Park, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Apr. 23, 1979, Ser. No. 32,329
Int. Cl.³ F02K *3/06, 3/08*
U.S. Cl. 60—261 **3 Claims**



1. In a gas turbofan engine, with a variable area bypass injector comprising pivotally mounted chutes for injecting bypass airflow radially inward into an exhaust duct of the aircraft engine when said chutes are pivoted radially inward, an apparatus for controlling fan bypass duct airflow into an

exhaust duct cooling annulus that is downstream and in direct flow communication with a bypass duct, wherein said apparatus comprises:

inner and outer coaxial surfaces defining therebetween an annular inlet to said exhaust duct cooling annulus;

a sealing lip on one of said coaxial surfaces, said lip extending into said annular inlet; and

an annular translating member movable into and out of said annular inlet at the region of said sealing lip thereby providing a flow control for at least partially blocking airflow into said exhaust duct cooling annulus;

link arms extending from said annular translating member and pivotally connected to said chutes whereby translation of said translating member for restricting airflow into the annular inlet additionally pivots said chutes radially outward to restrict injection of bypass air into the exhaust duct.

4,285,195

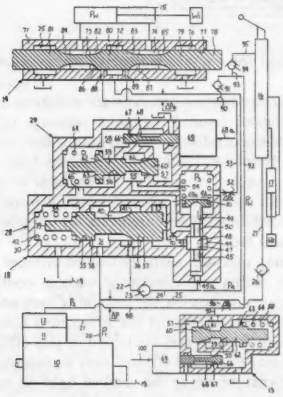
LOAD RESPONSIVE CONTROL SYSTEM

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation-in-part of Ser. No. 109,053, Jan. 2, 1980, and a continuation-in-part of Ser. No. 111,194, Jan. 11, 1980. This application Jun. 16, 1980, Ser. No. 159,864

Int. Cl.³ F15B *13/08*

U.S. Cl. 60—450 **20 Claims**



1. A load responsive fluid control system comprising a fluid pump having an output flow control and an outlet, a fluid motor subjected to load pressure, exhaust means, and a direction control valve interposed between said outlet of said pump, said fluid motor and said exhaust means, said direction control valve having first valve means for selectively interconnecting said fluid motor with said pump and said exhaust means and for providing variable orifice means between said outlet of said pump and said fluid motor, load pressure sensing port means in said direction control valve selectively communicable with said fluid motor and with duct means connected to said output flow control of said pump, second valve means responsive to pressure in said load pressure sensing port means in said direction control valve having control means and fluid throttling means operable to throttle fluid flow from said fluid pump to said fluid motor to maintain a constant pressure differential at a preselected constant level across said control means of said second valve means and to maintain a constant pressure differential across said variable orifice means, third valve means having means operable through said fluid throttling means of said second valve means to vary level of said constant pressure differential across said variable orifice means while said pressure differential across said control means of said second valve means remains constant at said constant predetermined level, and fourth valve means operable through said output flow control of said pump to control the pressure differential between pressure in said pump outlet and pressure in said load pressure sensing port means.

4,285,196

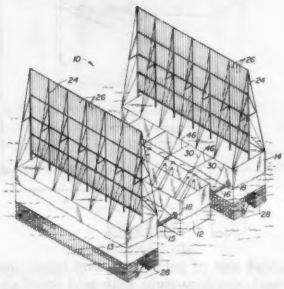
WAVE POWER GENERATOR

James R. Ekstrom, 5537 Blossom Vista Ave., San Jose, Calif. 95124, and Howard B. Ekstrom, 7 Francisco Dr., Pompton Plains, N.J. 07444

Filed Nov. 16, 1979, Ser. No. 95,016

Int. Cl.³ F03B *13/12*

U.S. Cl. 60—499 **20 Claims**



1. Apparatus for deriving power output from wave action comprising:

a rotatable member capable of rotating only in one direction;

a float which rises and falls in response to wave action and thereby moves relative to the rotatable member;

means mounted on said float for rocking the float in the presence of wind; and

means for coupling the float to the rotatable member so that movement of and rocking of the float both rotate the rotatable member in said one direction.

4,285,197

ISOTHERMAL CHAMBER AND HEAT ENGINES CONSTRUCTED USING SAID CHAMBER

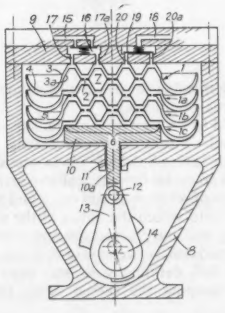
Jean Cloup, Chateau Beaugey, Carignan, 33360 Latresne, France

Filed Feb. 12, 1979, Ser. No. 11,361

Claims priority, application France, Feb. 15, 1978, 78 04308

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—525 **8 Claims**



1. An isothermal chamber constituted by two walls of complementary shapes connected at their peripheries to define between them an enclosure containing a gas, the said walls

having a deformable circumferential zone and a central rigid zone providing a variable capacity, means for passing an auxiliary fluid in heat exchange relation with said rigid zone, whereby the gas contained in the enclosure will undergo substantially isothermal transformations, the walls of the chamber being shaped to provide in the deformable circumferential zone the shape of a half torus, and in the central rigid zone grooves constituting the means for the passage of the auxiliary fluid.

4,285,198

ACCUMULATOR CHARGING VALVE

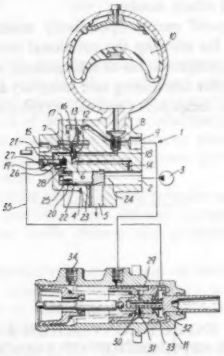
Ludwig Budecker, Frankfurt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,693

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849877

Int. Cl.³ G05D *15/00*

U.S. Cl. 60—547 A **15 Claims**



1. An accumulator charging valve comprising:

a pressure port connected to a source of pressure-transmitting fluid;

a first user port connectible to a first user component;

a second user port connectible to a pressure accumulator and to a second closed-center user component;

a valve device operative in response to pressure in said accumulator to connect said pressure port to said second user port via a throttle below a predetermined accumulator pressure; and to disconnect said pressure port from said second user port when said accumulator pressure is above said predetermined pressure; and

a non-return valve having an open position to connect said pressure port to said first user port and a closed position to shut off the connection between said pressure port and said first user port, said non-return valve moving from said closed position to said open position when said valve device disconnects said pressure port from said second user port responsive to increase of accumulator pressure above said predetermined pressure, and said non-return valve being moved from said open position to said closed position by a control pressure when said accumulator pressure falls below said predetermined pressure to thereby move said valve device to said connecting position and said second user component is concurrently activated to enable said non-return valve to supply said fluid to said second user component and to charge said accumulator with said fluid, said control pressure being coupled to said non-return valve by a supply line containing therein a control valve having a first position connecting said supply line to said non-return valve when said second user component is activated and a second position connecting an unpressurized return line to said non-return valve when said second user component is inoperative.

4,285,199

HYDRAULIC BRAKE BOOSTER

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

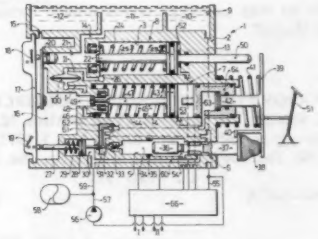
Filed Nov. 17, 1978, Ser. No. 961,809

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1977, 2753585

The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.

Int. Cl.³ B60T *13/20*

U.S. Cl. 60—550 **18 Claims**



1. A hydraulic brake booster for a vehicle brake apparatus comprising pressurizing apparatus with a pump and a pressurized reservoir, a reservoir-switchover piston adapted to be subjected to the pressure in the pressurized reservoir and engagable with a control valve, said control valve being associated with a pair of hydraulic main cylinders and each having connection means adapted to control both said pressurizing apparatus connected with the said main cylinders and said main cylinders connected with a relief means, at least one of said main cylinders including piston cooperating means cooperating with pedal-operated means and said piston cooperating means adapted to be operated by said pedal-operated means on pressure failure, said piston cooperating means having at least one main cylinder including an auxiliary pressure means, said auxiliary pressure means including an auxiliary cylinder, piston means being coextensive with said at least one main cylinder, said pressurizing apparatus including a refill container comprising a container relief means, said auxiliary pressure means communicating with said container relief means through a valve means and said valve means being coupled with said reservoir switchover piston.

4,285,200

HYDRAULIC ASSIST TURBOCHARGER SYSTEM

Joe L. Byrne, Torrance; Robert J. Kobayashi, Rancho Palos Verdes, and James H. Nancarrow, Torrance, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

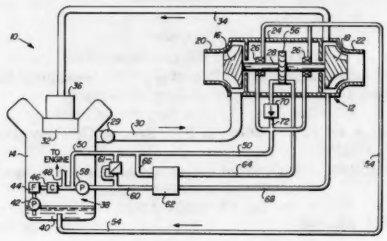
Filed Jul. 16, 1979, Ser. No. 57,790

Int. Cl.³ F02B *37/10*

U.S. Cl. 60—607 **88 Claims**

1. A turbocharger system for supplying charge air to a combustion engine, comprising a turbocharger including a turbine rotatably driven by engine exhaust gases, and a compressor rotatably driven by said turbine for supplying charge air to said engine; an engine hydraulic system including means for supplying hydraulic fluid to said turbocharger for lubrication thereof; an hydraulic turbine coupled directly to said turbocharger; and means for selectively supplying a portion of the fluid from said engine hydraulic system to said hydraulic turbine at a relatively high pressure for rotatably driving said

hydraulic turbine for supplementally driving said compressor, said means for supplying fluid to said hydraulic turbine includ-



ing means to fully submerge said hydraulic turbine during operation thereof.

4,285,201

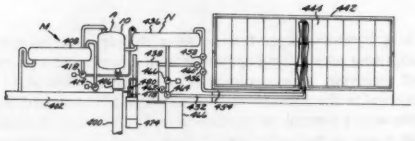
VAPOR POWERED ENGINE ASSEMBLY

Robert C. Stewart, 739 Appleway, Coeur D'Alene, Id. 83814

Continuation-in-part of Ser. No. 848,873, Nov. 7, 1977, Pat. No. 4,156,343. This application Apr. 2, 1979, Ser. No. 26,022

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641 A **20 Claims**



1. An engine capable of receiving high pressure vapor from a heated source thereof and transforming a portion of the pressure energy thereof to rotational power prior to discharging said vapor at a lower pressure from said engine, said engine including:

a. a confined space defining pressure vessel that includes a top and bottom, said confined space in communication with said high pressure source;

b. a crankshaft that includes a plurality of throws and axially aligned straight end portions;

c. first means for rotatably supporting said end portions in fixed positions in said confined space, said crankshaft extending between said top and bottom;

d. a power generating assembly in said confined space for imparting rotary motion to said crankshaft, said assembly including a frame that occupies a fixed position relative to said pressure vessel; a plurality of parallel cylinders supported by said frame in axial alignment with said throws, each of said cylinders having a first closed end and a second open end adjacent said crankshaft, with each of said cylinders having a first high pressure vapor inlet port and second low pressure vapor discharge port therein adjacent said first end; a plurality of pistons slidably mounted in said cylinders, each of said pistons having first and second ends; and a plurality of piston rods pivotally connected to said second ends of said pistons and to said throws most adjacent thereto;

e. conduit means for receiving low pressure vapor from said cylinders and directing said low pressure vapor to a location remote from the exterior of said pressure vessel;

f. first rotatable valve means for sequentially establishing communication between each of said second ports and said conduit means;

g. second rotatable valve means for sequentially establishing communication between each of said first ports and high pressure vapor in said confined space;

h. second means actuated by the rotation of said crankshaft for so sequentially rotating said first and second valve means that as each of said pistons moves in a power stroke from said second end of said cylinder in which it is disposed towards said first end of said cylinder, due to the force exerted by said high pressure vapor on said first end of said piston, said first valve means maintains communication between said second port and said conduit means during the major portion of said power stroke, with said second valve means obstructing communication between said first port and high pressure vapor in said confined space during at least the major portion of said power stroke, said second valve means during at least the major portion of the return stroke of said piston maintaining communication between said high pressure vapor in said confined space and said first port for said piston to have said high pressure vapor exert equal and opposite forces on said first and second ends thereof and minimize the energy required to move said piston through said return stroke, and said first valve means obstructing communication between said second port and said conduit means during said return stroke;

i. power take-off means operatively associated with said crankshaft for utilizing the rotational power of the latter due to the reciprocation of said pistons; and

j. third means for lubricating said assembly and crankshaft as said pistons reciprocate and said crankshaft rotates.

4,285,202

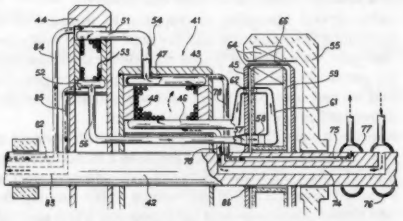
METHOD OF ENERGY CONVERSION AND A DEVICE FOR THE APPLICATION OF SAID METHOD

Bernard Bailly du Bois, 58 rue de Maubeuge, 75000 Paris, France

Filed Oct. 16, 1978, Ser. No. 951,943

Int. Cl.³ F01K *25/06;* **F02C** *1/04*

U.S. Cl. 60—650 **13 Claims**



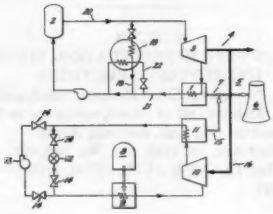
1. A method of energy conversion involving at least one step of compression or expansion of a working fluid within a rotor, wherein said method comprises: circulating the working fluid within a duct which is rigidly fixed to the rotor and follows a circuit having the shape of a spiral, said spiral being oriented in such a manner as to draw nearer to the axis of rotation of the rotor as it is followed around said axis in the direction of rotation of the rotor and wherein the geometrical characteristics of the duct are determined in conjunction with the operating conditions in such a manner as to ensure that the ratio of the azimuthal projection of the friction force exerted on the fluid by the duct walls and the azimuthal projection of the Coriolis force to which the fluid is subjected are in the range of 0.2 to 2.

4,285,203

MEANS AND METHOD FOR SIMULTANEOUSLY INCREASING THE DELIVERED PEAK POWER AND REDUCING THE RATE OF PEAK HEAT REJECTION OF A POWER PLANT

Himanshu B. Vakil, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 25, 1979, Ser. No. 87,972
Int. Cl.³ F01K *23/04*
U.S. Cl. 60—652 10 Claims



1. A method for simultaneously increasing the delivered peak power and reducing the peak heat rejection rate of a power plant which plant produces power cyclically over time including a period of peak power production and a period of decreased power production, said power plant having a primary power cycle and a secondary power cycle, said method comprising the steps of:

generating thermal energy in said primary power cycle and rejecting a portion of said thermal energy from said primary power cycle during the production of power therein:

providing a thermal reservoir in said secondary power cycle capable of accepting thermal energy at a temperature below that of said thermal energy rejected from said primary cycle;

transferring at least a portion of said thermal energy rejected from said primary cycle during said period of peak power production to said thermal reservoir of said secondary cycle, and producing power in said secondary power cycle during said transfer; and

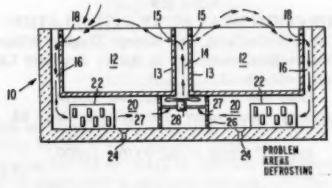
withdrawing heat energy from said thermal reservoir during at least a portion of said period of decreased power production.

4,285,204

DEFROSTING PROBLEM AREAS OF REFRIGERATED DISPLAY CASES

John H. Vana, Allentown, N.J., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Feb. 28, 1980, Ser. No. 125,712
Int. Cl.³ F25B *41/00*; A47F *3/04*; F25B *47/00*
U.S. Cl. 62—81 16 Claims



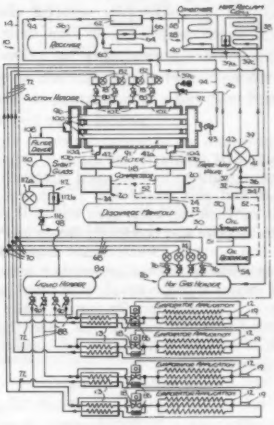
12. The method of defrosting a refrigerated display case that comprises the steps of circulating hot gas through an evaporator coil of said case while maintaining operation of an air circulating fan to circulate air through the coil in the direction in which the air is circulated during normal refrigeration modes of the case; thereafter reversing the direction of air circulation during the continued circulation of hot gas through the evaporator coil to defrost areas within the case normally upstream from the evaporator in the sense of the direction of air during the refrigerating mode; and thereafter again reversing the direction of air circulation to cause the same to revert to the direction in which air flows within the case during the refrigerating modes thereof.

4,285,205

REFRIGERANT SUB-COOLING

Leonard I. Martin, 913 Melvin Dr., N. Bellmore, N.Y. 11710, and Robert H. Harms, 129 Clinton St., Malverne, N.Y. 11565

Filed Dec. 20, 1979, Ser. No. 105,728
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—113 9 Claims



1. In a refrigeration system of a type having at least one compressor at a central location, a condenser, a plurality of remotely located evaporators, liquid-side conduit means interconnecting the output of said condenser with the inputs of said evaporators for conducting relatively warm refrigerant liquid from said condenser to the inputs of said evaporators, and suction-side conduit means interconnecting the outputs of said evaporators with the input of said compressor for conducting relatively cool gaseous refrigerant from said evaporator outputs to the input of said compressor, the improvement comprising a liquid-to-suction heat exchanger, said heat exchanger being located at said central location, and the respective conduit means being connected to said heat exchanger so as to allow substantially all of the relatively cool gaseous refrigerant returning to said compressor input from said evaporators to be maintained in heat exchange contact at said central location with substantially all of the relatively warm liquid refrigerant being conducted from said condenser to said evaporator inputs.

4,285,206

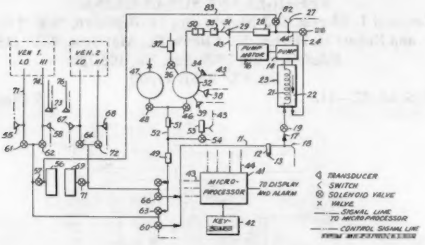
AUTOMATIC REFRIGERANT RECOVERY, PURIFICATION AND RECHARGE APPARATUS

Richard Koser, Croton Falls, N.Y., assignor to Draf Tool Co., Inc., Bedford Hills, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,555
Int. Cl.³ F25B *45/00*
U.S. Cl. 62—126 45 Claims

1. Apparatus for recovery of refrigerant from an air-conditioning system, comprising means for connection to the refrigerant-containing portion of said air-conditioning system; first

pump means coupled at its inlet side to said connection means for producing a vacuum level at said connection means for effecting essentially complete recovery of said refrigerant and for producing a pressure at said first pump means outlet side for liquifying said refrigerant; evaporator means coupled intermediate said connection means and said pump means for vaporizing refrigerant in transit towards said pump means; condenser means coupled to the outlet side of said first pump means for liquifying said refrigerant under the pressure of said first pump means and at essentially ambient temperature; first tank means for receiving liquified condensate from said condenser means; first powered valve means movable between open and shut conditions and disposed intermediate said evaporator means and said connection means; second powered valve means movable between open and shut conditions and disposed intermediate said condenser means and said first tank means; and first pressure switch means disposed intermediate said evaporator means and said connection means for sensing the pressure thereat and operatively connected to said first and second powered valve means for automatically shutting said first and second powered valve means when the sensed pressure drops to a pre-determined level representative of conclusion of refrigerant recovery.



4,285,207

AIR CONDITIONING APPARATUS COMPRISING REFRIGERANT SHORTAGE SENSOR

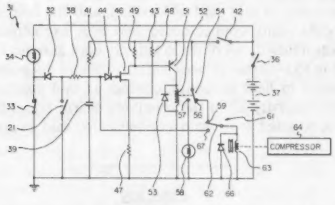
Hiroyuki Sugiura; Ryota Hasegawa, and Teruo Nakamura, all of Konan, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,723

Claims priority, application Japan, Jul. 31, 1978, 53/105097[U]; Aug. 4, 1978, 53/107649[U]; Sep. 9, 1978, 53/124175[U]

Int. Cl.³ B60H *3/04*; G05D *23/32*

U.S. Cl. 62—133 **14 Claims**



1. An air conditioning apparatus including a motor driven compressor and a refrigerant reservoir connected to the compressor, characterized by comprising:

level sensor means for producing an electrical signal when a refrigerant level in the reservoir is below a predetermined value;

level switch means for normally controlling the compressor to be motor driven and for controlling the compressor to be not motor driven in response to the electrical signal;

delay means connected between the level sensor means and the level switch means for delaying the electrical signal for a predetermined length of time; and

temperature sensor means for controlling the compressor to be motor driven only when a sensed temperature is above a predetermined value;

the temperature sensor means comprising means for inhibiting the level sensor means from producing the electrical signal when the sensed temperature is below the predetermined value.

4,285,208

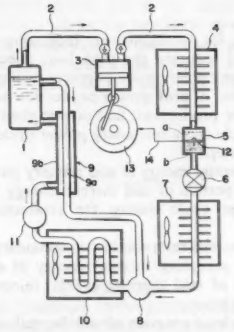
ABSORPTION TYPE REFRIGERATING MACHINE OF HYBRID CONSTRUCTIONS

Isao Takeshita, Neyagawa; Shiro Hozumi, Sakai, and Nobuhiko Wakamatsu, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 16, 1980, Ser. No. 140,863

Int. Cl.³ F25B *15/00, 27/00, 1/00*

U.S. Cl. 62—141 **3 Claims**



1. In an absorption type refrigerating cycle having a refrigerant vapor generator for evaporating, by the application of thermal input from outside, the refrigerant absorbed in the solution in an adsorber which is provided to absorb into the solution the refrigerant evaporated by an evaporator connected through a condenser and an expansion valve to the generator in a refrigerant circuit, a hybrid type refrigerating machine comprising a compressor for compressing the refrigerant vapor and connected between said generator and condenser, a refrigerant reservoir for storing the condensed refrigerant liquid connected between said condenser and expansion valve, and a means for controlling the operation of said compressor in response to the liquid level in said refrigerant reservoir.

4,285,209

ABSORPTION HEAT PUMP INSTALLATION

Johannes Luthi, Neftenbach, and George Ziegler, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 10, 1979, Ser. No. 73,874

Claims priority, application Switzerland, Sep. 13, 1978, 9588/78

Int. Cl.³ F25B *27/02, 15/00, 13/00*

U.S. Cl. 62—238.3 **17 Claims**

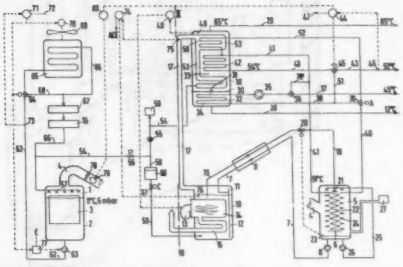
1. An absorption heat pump installation comprising

an absorber receiving a hygroscopic absorption medium;

an expeller for receiving said hygroscopic absorption medium with water;

a condenser connected to said expeller to receive a flow of steam therefrom and to condense the stream;

a pump for pumping the absorption medium at high concentration through said expeller and absorber;
means for circulating water through said absorber, expeller and condenser;
an energy accumulator receiving a part of the water;
a vapor line communicating an exposed water surface in said accumulator with said absorber to deliver water vapor to said absorber; and



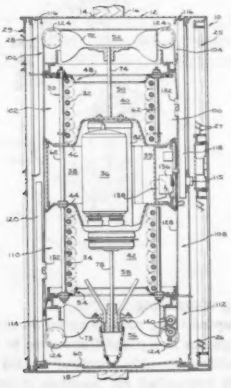
a water loop being connected to said accumulator and having at least one low-temperature heat source to receive and heat a flow of water from said accumulator; said hygroscopic absorption medium and its concentration being selected so that the absorption temperature at the pressure prevailing at the triple point of the water is higher than the temperature of the water flowing through said absorber in order to remove absorption heat.

4,285,210

SELF-CONTAINED HEATING AND COOLING APPARATUS

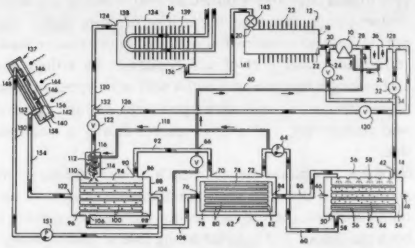
William J. McCarty, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 28, 1980, Ser. No. 144,795
Int. Cl.³ F25B *29/00, 13/00*
U.S. Cl. 62—325 **4 Claims**



1. An air conditioning apparatus for conditioning air in an enclosure having a wall opening comprising:
a housing having openings on opposed sides thereof adapted to be positioned in said wall opening with the opening on one side of said housing facing the outdoors and the opening on the other side of said housing facing said enclosure;
a central chamber defined by spaced partition means dividing said housing into an evaporator compartment and a condenser compartment;
a refrigerator system of the type having a refrigerant capable of boiling under relatively low pressure to absorb heat and condensing under relatively high pressure to expel heat, a compressor for compressing a refrigerant fluid in gasious phase having a high pressure outlet port and a low pressure inlet port, a condenser in said condenser compartment having a high pressure inlet port and a high pressure liquid refrigerant outlet port, means connecting said inlet port to said compressor outlet, an evaporator in said evaporator compartment having a low pressure liquid inlet port in fluid communication with said high pressure liquid refrigerant outlet port of said condenser by a fluid line, and having a low pressure outlet port at its upper portion, means connecting said outlet port with said inlet port of said compressor, and a flow control means in said fluid line;
a fan shroud partition means in each of said compartments substantially dividing said compartments into inlet and outlet sections, each of said sections having an opening in both the indoor and outdoor facing side of said housing; a fan within each of said shrouds for circulating air through each of said compartments in a direction from said inlet section to said outlet section;
a first damper slidably arranged in the indoor facing side of said housing being associated with the indoor facing openings of said compartments; a second damper slidably arranged in the outdoor facing side of said housing being associated with the outdoor facing opening of said compartments; and
means for selectively positioning said dampers to a first cooling position wherein the indoor facing openings of said evaporator compartment communicate with the enclosure and the outdoor facing openings of said condenser compartment communicate with said outdoors for cooling the air in said enclosure and to a second heating position wherein the indoor facing openings of said condenser compartment communicate with the enclosure and the outdoor facing openings of said condenser compartment communicate with said outdoors for heating the air in said enclosure.
defrost means including a first defrost flow passage connected between said low pressure outlet port of said evaporator and said high pressure inlet of said condenser; a second defrost flow passage connected between said high pressure outlet of said condenser and said low pressure inlet of said evaporator, a first valve in said first defrost flow passage and a second valve in said second defrost flow passage;
said first and second valves being operable to a closed position when a refrigerant pressure differential is present in said system and being operable to an open position when said pressure differential is bled down through said flow control means after said compressor operation terminates, so that a nonrestrictive refrigerant defrost flow path circuit is established through said first defrost flow passage between the upper portions of said condenser and said evaporator and through said second defrost flow passage between the lower portion of said condenser and said evaporator, thereby allowing liquid refrigerant when present in the lower portion of said evaporator to flow through said second defrost flow passage into the lower portion of said condenser, while the warmer gaseous refrigerant when present in the condenser will flow through said first defrost flow passage into the upper portion of said evaporator to lower the temperature of said evaporator and melt frost when present.

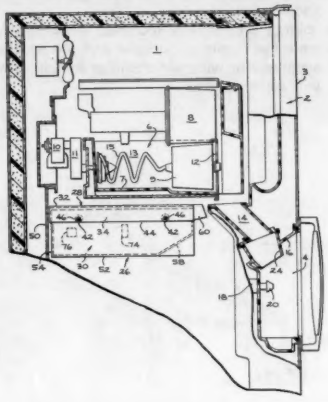
4,285,211
COMPRESSOR-ASSISTED ABSORPTION REFRIGERATION SYSTEM
Silas W. Clark, 1000 Greens Rd., #809, Houston, Tex. 77060
Continuation-in-part of Ser. No. 887,445, Mar. 16, 1978, Pat. No. 4,171,619. This application Mar. 8, 1979, Ser. No. 18,647
Int. Cl.³ F25B *7/00, 27/00*
U.S. Cl. 62—335 **11 Claims**



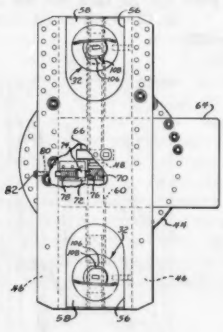
1. In an absorption refrigeration system comprising generator means for generating a refrigerant vapor from a refrigerant solution, condenser means for condensing said refrigerant vapor from said generator means to form condensed refrigerant, evaporator means for evaporating said condensed refrigerant and for cooling a surrounding material, absorber means for absorbing refrigerant vapor from said evaporator means into said refrigerant solution, and a heat exchanger for circulating said solution through said absorber means and said generator means, said generator means, condenser means, evaporator means, absorber means and heat exchanger being connected in a refrigerant circuit, the improvement comprising:
an oiled compressor, connected to said refrigerant circuit, for compressing said refrigerant vapor said compressor discharging oil into said refrigerant circuit;
oil separating means downstream of said compressor for separating oil from said refrigerant solution and returning said oil to said compressor;
a bleed line, conducting said refrigerant solution from a portion of said refrigerant circuit between said absorber means and said generator means to a line between said compressor and said oil separating means and
valve means on said bleed line for permitting fluid flow through said bleed line only when said oiled compressor and said absorber means are operating,
said refrigerant solution being miscible in said oil and being separable by evaporation from said oil.

4,285,212
ICE DISPENSER STORAGE ASSEMBLY
Luis E. Prada, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Jun. 2, 1980, Ser. No. 155,344
Int. Cl.³ F25C *5/18*
U.S. Cl. 62—344 **7 Claims**

1. An ice dispenser storage assembly for use in a freezer compartment of a refrigerator including a motor-driven ice dispenser comprising;
a cover secured to the inside of the freezer compartment,
an ice storage receptacle movable from a first ice storage position to a second ice transfer position along and below the cover,
means to stop the ice storage receptacle in the second ice transfer position, and
means to energize the ice dispenser when the ice storage receptacle is in the second position and deenergize the ice dispenser when the ice storage receptacle is not in the second position.



4,285,213
COUPLING FOR A TEST STAND
Charles H. Herr, Jr., Peoria, and Alan L. McLees, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Division of Ser. No. 907,455, May 19, 1978, Pat. No. 4,199,979. This application Sep. 24, 1979, Ser. No. 78,023
Int. Cl.³ F16C *1/26*
U.S. Cl. 64—3 **5 Claims**

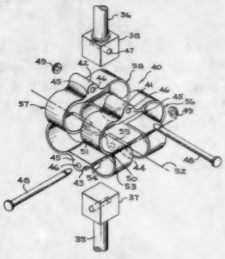


1. A coupling comprising:
a housing adapted to be rotated about an axis and including elongated guides in a plane transverse to said axis;
at least two slides movably received in said guides;
a screw shaft journalled for rotation in said housing and connected to said slides, said screwshaft being fixed against substantial longitudinal movement within said housing and, when rotated, effecting simultaneous movement of said slides towards or away from said axis;
detent means carried by said housing and engaging said screwshaft for holding said screw shaft against rotation; and
a plurality of teeth, one for each slide, each mounted on an associated slide and extending therefrom in a direction generally parallel to said axis.

4,285,214
FLEXIBLE COUPLING

John Bochan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 26, 1979, Ser. No. 107,211
Int. Cl.³ F16D 3/52
U.S. Cl. 64—15 B 8 Claims



1. A flexible coupling for drivingly interconnecting a driving member and a driven member, comprising:

a first coupling arrangement adapted for pivotal connection to one of the driving and driven members;

a second coupling arrangement adapted for pivotal connection to the other of the driving and driven members; and

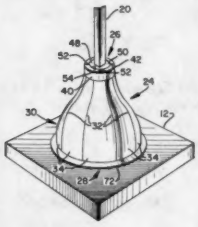
a plurality of flexible arms drivingly interconnecting said first and second coupling arrangements;

each of said arms including a first arm portion smoothly curved about a first axis; a second arm portion smoothly curved about a second axis perpendicular to said first axis; and a planar intermediate portion joining said first and second arm portions and disposed generally parallel to said first and second axes whereby said flexible coupling will transmit rotary motion between the driving member and the driven member in a substantially uniform manner even though the driving and driven members are out of alignment.

4,285,215
ROTARY TABLE AND KELLY GUARD

George K. Roeder, Box 4335, Odessa, Tex. 79760

Filed Oct. 18, 1976, Ser. No. 733,113
Int. Cl.³ F16D 3/06
U.S. Cl. 64—23.5 9 Claims



1. A safety guard in combination with a kelly bushing, a kelly, and a rotary table of a rotary drilling rig;

said guard comprising an annular shoe for abuttingly engaging a non-rotating floor area outwardly of the rotary table;

a bearing means spaced from said shoe, including a rotating member which rotates with said slidably receives a marginal length of the kelly therewithin;

said bearing means includes a fixed housing, said rotating member being rotatably captured in low friction relationship within said housing;

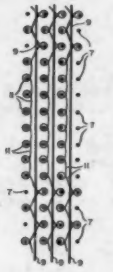
a circumferentially extending wall having a circumferentially extending upper end affixed to said housing and a circumferentally extending bottom end affixed to said shoe;

so that said guard encapsulates the rotary table, kelly bushing, and a marginal length of a kelly.

4,285,216
SINGLE BAR, WARP LIFT-OFF-RESISTANT, LOFTED FABRIC CONSTRUCTION

Daniel Duhl, New York, N.Y., assignor to Polylok Corporation, New York, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,181
Int. Cl.³ D04B 23/08, 23/10
U.S. Cl. 66—192 15 Claims



1. A fabric made on a stitch-through type machine, comprising:

a flexible substrate;

a plurality of warp elements laid on the substrate in the general warpwise direction; and

knitting thread wales extending in the warpwise direction and containing a multiplicity of warpwise stitches in a warp lift-off-resistant configuration network having, on a given knitting thread wale, a combination of chain stitch courses in securing relation to the substrate and generally non-securing relation to the warp elements, and half-tricot stitch courses in securing relation to both the substrate and warp elements, said knitting thread binding together into an integrated structure the substrate and warp elements, to secure the substrate and warp elements against relative displacement, and to stabilize the fabric against unravelling of the knitting thread network and lifting off of the warp elements,

said fabric having an aesthetically pleasing appearance corresponding to the loft imparted to the warp elements by virtue of the generally non-securing relation of the chain stitch components of the knitting thread network to said warp elements.

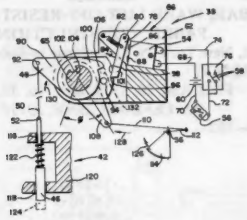
4,285,217
STEERING SYSTEM FOR CONTROLLING THE OPERATION OF A KNITTING MACHINE

Kresimir Mista, Obertshausen, and Hans-Jurgen Hohne, Hainburg, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jan. 31, 1980, Ser. No. 117,354
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2904367
Int. Cl.³ D04B 23/04
U.S. Cl. 66—205 8 Claims

1. A steering system for controlling the operation of a warp knitting machine having a needle bar and cooperating drive levers and pushrods operatively coupled to a source of driving power comprising:

(a) steering mechanism means disposed generally above and in relatively close proximity to said guidebar drive levers;
(b) a plurality of steering element means disposed proximate said guides, operatively coupled to said steering mechanism means and having two stable positions, said steering element means deflecting said guides during stitch formation in a first position and not deflecting said guides in a



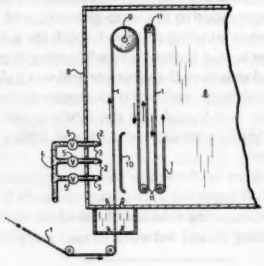
second position, said first or said second position of each steering element means being controlled by said steering mechanism; and
(c) electromechanical means operatively coupled to said steering mechanism means and in synchronism with said power source for selecting said first or second position of said steering means in accordance with a predetermined program.

4,285,218

SYSTEM FOR FIXING PRINTS WITH REACTIVE AND VAT DYES

Helmut Lehmann, Buchholz, Fed. Rep. of Germany, assignor to Artos Dr.-Ing. Meier-Windhorst KG (GmbH), Seevetal, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,106
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2802020
Int. Cl.³ D06B *1/02, 21/00*
U.S. Cl. 68—5 D **3 Claims**



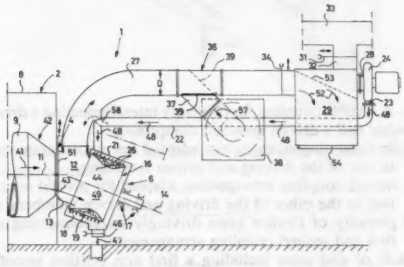
1. A system for the fixing of prints with reactive and vat dyes in the two-phase printing method on textile webs made of cellulose of the type wherein required auxiliary means for fixing is applied onto the textile web by electrostatic spraying, the improvement comprising:
a fixing device having a steamer housing which serves as a heating means;
means for moving a web through said steamer housing; and
a spraying device for electrostatically spraying said auxiliary means onto the textile web which is positioned within said steamer housing of said fixing device, said spraying device comprising a plurality of spray nozzles, said nozzles serving as electrodes and each including valve means for effecting their activation and deactivation and at least one counter electrode mounted adjacent to said web, on the other side thereof and opposite to said spray nozzles, and a plurality of spray nozzle supports on which said spray nozzles are supported and which are disposed adjacent to said web on one side thereof in a transverse direction relative to the feeding direction of said web, and which supports are also disposed adjacent to each other and are spaced-apart in a longitudinal direction relative to said feeding direction.

4,285,219

APPARATUS FOR TREATMENT OF LAUNDRY

Heinz L. Grunewald, Bremen, Fed. Rep. of Germany, assignor to Engelhardt & Föster, Bremen, Fed. Rep. of Germany

Filed Jan. 12, 1979, Ser. No. 3,397
Int. Cl.³ D06F *29/02*
U.S. Cl. 68—19.2 **9 Claims**



1. An apparatus for treating laundry which utilizes a spin drying perforated drum disposed within a surrounding housing and wherein a circumjacent space is defined between the drum and the housing, the provision therewith of a fluid pressure source connected in flow communication with the circumjacent space to direct a pressurized fluid flow into the space and thence inwardly through the drum perforations, means for selectively curtailing the flow from the pressurized source, means for subjecting the interior of the drum to suction, the fluid pressure source being a compressed air source which is blower interconnected to the housing by an inlet conduit, an open end on the drum connected in communication with the outlet end of a laundry washing unit by means of a laundry transfer chamber, suction means for creating negative pressure within the drum, and the suctions means including an outlet conduit from the transfer chamber which leads to the intake side of a blower.

4,285,220

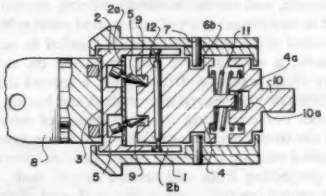
MAGNETICALLY OPERABLE LOCK

Tomomasa Kajita, 2-3-18, Mariuyamadori, Abeno-ku, Osaka-shi, Japan

Filed Nov. 13, 1978, Ser. No. 959,598
Claims priority, application Japan, Dec. 29, 1977, 52-178382[U]
Int. Cl.³ E05B *47/00*
U.S. Cl. 70—276 **6 Claims**

1. A magnetically operable lock, comprising a hollow cylindrical case, a turnable member which fits into one end of said case and having a contact outer face and an inner face, a plurality of magnetic pivotable pieces supported on said inner face of said turnable member, a solid cylindrical drive member rotatably positioned in said case adjacent said turnable member movable toward or away from said turnable member and rotatable with said turnable member, said drive member being formed in its outer periphery with a circumferential channel including two axially spaced parallel straight grooves each having a limited circumferential extent and a slanting groove interconnecting said straight grooves and having a face dis-

posed adjacent said pivotable pieces with engagement cavities for engagement with said pieces, an engaging pin extending from the inner periphery of said case into engagement with said circumferential channel, a turnable latch lever rotatably mounted in the other end of said case, a spring between said latch and said drive member and in engagement with said drive member, said drive member being co-rotative with and axially movable toward and away from said latch lever, and a magnetic key engageable with said contact face to pivot said pivotal pieces and being rotatable in one direction to rotate said turnable member, whereby, said drive member moves toward said turnable member with said engaging pin coming into engagement with the slanting groove by virtue of the pushing



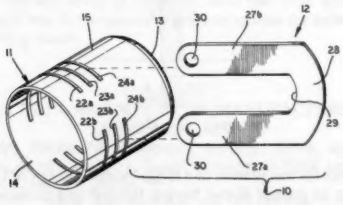
action of said spring and engagement of said pivotable pieces into said drive member cavities, rendering the latch lever further turnable upon the engaging pin coming into engagement with the straight groove positioned closer to the latch lever, the pivotable pieces being returnable out of engagement with the drive member cavities to hold the drive member away from the turnable member with the engaging pin being engaged in the straight groove positioned closer to the turnable member to render the latch lever turnable only to the extent that travel of said engaging pin in said straight groove closer to said turnable member permits, when the magnet key is removed from the contact face and when the drive member has been moved away from the turnable member by turning the magnet key and drive member in an opposite direction.

4,285,221

RETROFIT DOORKNOB LOCK APPARATUS

Maxwell G. Atchisson, 6695 Ridgemoore Dr., Doraville, Ga. 30360

Filed Jun. 18, 1979, Ser. No. 49,079
Int. Cl.³ E05B *17/14*
U.S. Cl. 70—416 **4 Claims**



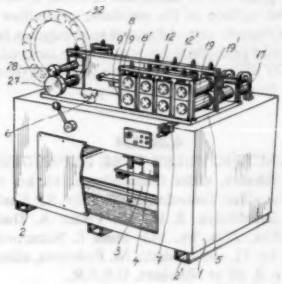
1. Retrofit lock apparatus for a door knob, comprising:
means operative to fit over and entirely enclose a knob and associated shaft of a doorknob, so as to shroud the knob and shaft from unauthorized access; and
means selectably operative to retain said enclosing means in place shrouding the knob and shaft;
said enclosing means comprising an enclosure having an open end to receive the knob and to permit said enclosure to fit over the knob and associated shaft;
said enclosure having a plurality of openings located at different spacings from said open end; and
said retaining means extending within a selected one of said openings to maintain said enclosure in place shrouding the knob and shaft.

4,285,222

MACHINE FOR MANUFACTURE OF SPIRAL TUBING WITH FOLDED SEAM

Kjell-Inge Jagelid, Kungsbacka, Sweden, assignor to Kurt Hedlund, Kungsbacka, Sweden

Filed Jun. 13, 1979, Ser. No. 48,189
Claims priority, application Sweden, Dec. 22, 1978, 7813290
Int. Cl.³ B21D *5/12*
U.S. Cl. 72—28 **9 Claims**



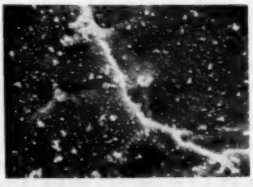
1. In a machine for the manufacture of helically seamed tubing, including a plurality of successive roller pairs adapted to preshape a strip material, and a helical coiling tube shaping tool adapted to join two edge portions of the strip material by means of said folded seam the improvement comprising each pair of rollers is provided with a separate hydraulic drive motor operatively connected to a first roller, the second roller being driven by the first roller via a transmission means, fluid pressure means for driving said motors, said motors being connected in series in a hydraulic circuit from said fluid pressure means whereby the outlet of each motor is connected to the inlet of the motor for the next successive pair of rollers.

4,285,223

PHOSPHATE AND ESTER COATING METHOD

Narayan Das, Westmont, and Surya K. Misra, Naperville, both of Ill.

Filed Feb. 12, 1979, Ser. No. 11,169
Int. Cl.³ B21B *45/02*
U.S. Cl. 72—42 **6 Claims**



1. A method for treating metal surfaces of a thin metal sheet to form a coating suitable for use in multi-stage ironing operations to reduce the thickness of said sheet comprising contacting at least one metal surface with an aqueous phosphate solution to produce a totally reacted layer of insoluble crystalline phosphate containing iron phosphate and having a thickness equivalent of less than 100 milligrams per square foot with said phosphate layer having a grain size in the range of about 400 to about 2,500 angstroms, rinsing and cleaning the surface of the

phosphate layer to remove all unreacted phosphate, and applying an organic ester lubricant non-reactive with said phosphate to said surface in an amount no greater than 425 milligrams per square foot.

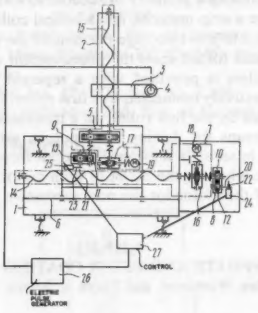
5. In the method of forming seamless containers from a black plate stock material in which blanks are cut from said black plate stock material and said discs are thereafter first formed into cups and then subjected to at least one ironing step in the presence of a lubricant, the improvement of contacting a surface of stock material with an aqueous acidic phosphate solution to produce a layer of insoluble crystalline phosphate containing iron phosphate chemically bonded to the stock material surface in an amount of less than 100 milligrams per square foot and having a grain size of about 400 to about 2,500 angstroms, contacting the surface of the insoluble crystalline phosphate layer with an organic ester lubricant to produce a layer of said lubricant on said phosphate layer and in an amount no greater than about 425 milligrams per square food and thereafter performing said forming and ironing steps.

4,285,224

ELECTRIC PULSE TUBE EXPANDER

Alexandr S. Shkatov, ulitsa Olshanskogo, 14, kv. 6; Boris Y. Mazurovsky, ulitsa Teatralnaya, 49/1, kv. 83; Vasily I. Sokolov, ulitsa Sovetskaya, 2, kv. 19; Viktor A. Dmitrichenko, prospekt Mira, 27-b, kv. 143; Sima I. Nazarova, prospekt Mira, 11-b, kv. 71, and Ljudmila M. Fedorova, ulitsa Chaikovskogo, 4, kv. 3, all of Nikolaev, U.S.S.R.

Filed Jan. 25, 1979, Ser. No. 6,458
Int. Cl.³ B21D *26/14*
U.S. Cl. 72—56 **5 Claims**



1. An electric pulse tube expander for expanding a tube, said tube expander comprising

a bed;

horizontal guides mounted on said bed;

carriage means guided by said horizontal guides;

a vertical guide mounted on said carriage means;

an electrode for applying a pulse to a tube to be expanded, said electrode being movable in vertical and horizontal planes, and being mounted on said vertical guide so that it is movable in a vertical plane on said vertical guide;

a first drive mounted on said bed for moving said electrode in a horizontal plane, said first drive including a first electric motor for producing a torque to move said electrode in a horizontal plane, a first reducer kinematically coupled to said first motor, said first reducer having an output shaft, and a first mechanism for setting the distance of movement of said electrode, said first mechanism being connected to said output shaft of said first reducer and having a first drive shaft operatively coupled to said first reducer, a first drive gear mounted on said first drive shaft, a first driven shaft, a first driven gear mounted on said first driven shaft and having teeth in a number corresponding to a given distance of movement of said electrode, said first drive and driven gear being in coupling relation with each other, a first arm affixed to and projecting from said first driven shaft, a first limit switch operably interacting with said first arm, a first lead screw mounted on said bed and kinematically coupled to the output shaft of said first reducer for moving said electrode in a horizontal plane, said first lead screw moving said vertical guide with said electrode in a horizontal plane;

a second drive mounted on said horizontal guides for moving said electrode in a vertical plane, said second drive including a second electric motor for producing a torque to move said electrode in said vertical plane, a second reducer kinematically coupled to said second motor, said second reducer having an output shaft, and a second mechanism for setting the distance of movement of said electrode, said second mechanism being operatively coupled to said output shaft of said second reducer and having a second drive shaft operatively coupled to said second reducer, a second drive gear mounted on said second drive shaft, a second driven shaft, a second driven gear mounted on said second driven shaft and having teeth in a number corresponding to the distance of movement of said electrode, said second drive and driven gear being in coupling relation with each other, a second arm affixed to and projecting from said second driven shaft, a second limit switch operably interacting with said second arm, a second lead screw kinematically coupled to the output shaft of said second reducer for moving said electrode in a vertical plane, said second lead screw moving said electrode in a vertical plane on said vertical guide;

a pulse generator electrically connected to said electrode for producing an electric current pulse for a tube expansion operation; and

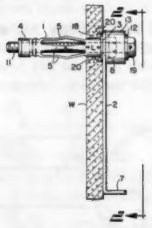
control means electrically connected to said pulse generator and to said first and second drives for moving said electrode in horizontal and vertical planes.

4,285,225

TOOL FOR INSTALLATION OF TOGGLE-SCREW ANCHORS

John H. Snell, 1325 Gateway Dr., Lantana, Fla. 33462

Filed Dec. 7, 1979, Ser. No. 101,112
Int. Cl.³ B21J *15/38*
U.S. Cl. 72—114 **9 Claims**



1. A tool for installation of a toggle-screw anchor of the type including an anchor sleeve having flanged and threaded ends with an intermediate longitudinally slotted section which is radially expanded upon axial movement of the threaded end toward the flanged end; said tool comprising an elongated flat body of strip material of tapered width having a handle at its narrow end projecting transversely from one side of said body and a passage through the middle of its wide end; and an actuating screw having a head and at least one spacer washer adjacent to said head; said screw having a shank extending through said washer and said passage and projecting transversely from the other side of said body for screwing thereonto an anchor sleeve with its flanged end snugly engaged with said other side of said body while said washer is snugly engaged between said head and said one side of said body whereby said projecting shank and anchor sleeve thereon may be inserted

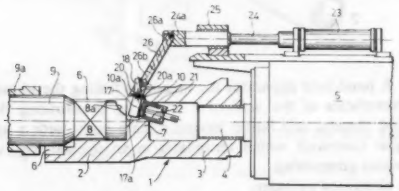
into a hole in a wall or the like with said other side of said body engaged with the front side of the wall to retain said screw, washer, and anchor sleeve perpendicular to the wall; said screw, upon turning thereof with respect to the anchor sleeve by torque applied on said head while said body is held against the wall and against turning by said handle, being operative to expand the anchor sleeve to grip the rear side of the wall around the hole.

4,285,226

MANDREL-HOLDER FOR A PILGER ROLLING MILL

Emanuele Gancia, Milan, Italy, assignor to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Aug. 20, 1979, Ser. No. 68,286
Int. Cl.³ B21B *25/02*
U.S. Cl. 72—208 **3 Claims**



1. In a mandrel-holder for a pilger rolling mill which is in one piece and comprises a head defining a seat adapted to receive and hold a tang end of a mandrel and a body adapted for coupling to an actuator used for driving the mandrel-holder in rotation and in a straight line, the improvement comprising:

a recess formed in the said body and opening on to the said seat,

a lever pivoted to the said body, having its pivoting axis perpendicular to the longitudinal axis of the mandrel-holder, the lever extending in an upper transverse position relative to the said seat and comprising a substantially rodlike portion extending outside the said body and a main portion extending into the recess, the lever also being angularly movable around its pivot from an operative position in which its main portion extends into the said seat into an inoperative position in which its main portion is retracted into the recess against the action of spring means, and

a thrust means borne externally and independently of the mandrel-holder and adapted to act on the rodlike portion of the said lever in order to move the lever through an angle into the inoperative position against the action of the spring means.

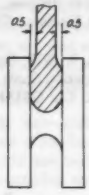
4,285,227

EDGE ROLL ASSEMBLY FOR MANUFACTURING A TAPER LEAF SPRING

Yoshihiro Sakai; Jun Takahashi; Toshiaki Satoh, and Akira Ohno, all of Yokohama, Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed May 30, 1979, Ser. No. 43,838
Int. Cl.³ B21B *27/00*; B21H *8/02*
U.S. Cl. 72—240 **4 Claims**

1. In an apparatus for manufacturing a taper leaf spring from a sheet of spring material, the sheet having top and bottom surfaces and side edges, the apparatus rolling side edges of the sheet to control the breadth of the leaf spring and subsequently rolling at least one of the top and bottom surfaces to control the taper of the leaf spring, the improvement wherein the apparatus includes edge roll assemblies for rolling side edges of the sheet, each of said edge roll assemblies having a concave main roll body for shaping side edges of the sheet to form side edges of the leaf spring and confronting regulating flanges parallel with each other extending outwardly from outer terminal peripheries of the main roll body, the regulating flanges constraining expansion of the sheet in the thickness direction



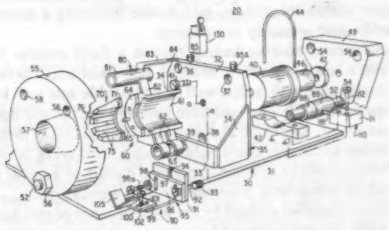
resulting from rolling in the breadth direction thereby regulating thickness of the sheet and increasing elongation of the sheet ahead of a portion thereof being rolled.

4,285,228

CRIMPING MACHINE FOR HOSE ASSEMBLY

David W. Gunning, Libertyville, Ill., assignor to Anchor Coupling Co., Inc., Libertyville, Ill.

Filed Aug. 20, 1979, Ser. No. 67,954
Int. Cl.³ B21D *39/00*
U.S. Cl. 72—402 **22 Claims**



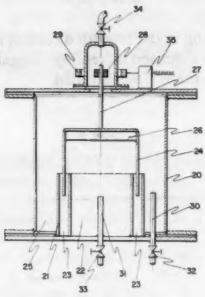
1. Apparatus for securing a coupling to the end of a hose over which the coupling is coaxially fitted, said apparatus comprising a frame, support means on said frame for supporting the associated coupling and hose in a predetermined configuration relative to said frame, a die-mounting member, a plurality of crimping dies carried by said die-mounting member for movement with respect thereto between a retracted configuration out of contact with the associated coupling and a crimping configuration adapted for crimping engagement with the associated coupling, means for mounting said die-mounting member and the dies carried thereby as a unit on said frame adjacent to said support means, a crimping head carried by said frame and adapted for movement between a release position out of engagement with said crimping dies and a working position engaging said crimping dies for effecting movement thereof from the retracted configuration to the crimping configuration thereof, and drive means carried by said frame and coupled to said crimping head for effecting movement thereof to the working position thereof thereby to effect crimping of the coupling onto the associated hose by said crimping dies.

4,285,229

INTRODUCED IN THE DETECTION OF LEAKAGES OF THE COOLING IN BLAST FURNACE NOZZLES

Adolfo Tornos Garcia, Oviedo; Alejandro Felgueroso Ruiz, and Aurelio Diaz Fernandez-Raigoso, both of Gijon, all of Spain, assignors to Empresa Nacional Siderurgica, S.A. (Ensidesa), Oviedo, Spain

Filed Aug. 8, 1979, Ser. No. 64,744
Claims priority, application Spain, Sep. 14, 1978, 473.370
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—40 14 Claims



1. A device for the detection of leakages in a fluid system and which functions in response to changes in the differential pressure within the system, said device including a detection assembly, said assembly comprising:

a cylindrical housing having therein a fixed annular hood and a relatively movable hood, said fixed hood having a double side wall, a first wall of said double side wall being spaced radially outward from a second wall of said double side wall, said first and second walls defining therebetween an annular space, said movable hood being inverted with respect to said fixed hood and having an annular wall which is movably positioned in said annular space;

an inner chamber defined by the interior space of said hoods;

an outer chamber defined by a space between the exterior of said hoods and the interior of said housing;

a first duct means for communicating said inner chamber with a fluid system;

a second duct means for communicating said outer chamber with a fluid system;

an inductive electronic circuit for producing an electromagnetic field and an electronic signal, said circuit having a coil and a movable ferrite core whereby the displacement of said core causes a variation in said field, said electronic signal being varied in response to said field variation;

said movable hood being axially movable in response to a change in the pressure differential between said chambers;

an axially projecting stem having two ends, one of said two ends being connected to said movable hoods, the other one of said two ends being connected to said ferrite core;

said annular space containing mercury which acts to substantially seal said inner chamber from said outer chamber and to guide said annular wall in its movement; and

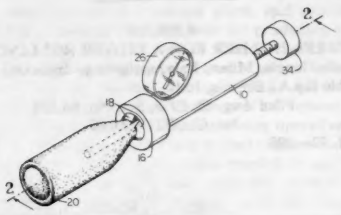
an electronic means connected to said inductive electronic circuit for receiving said electronic signal therefrom and generating an output signal, said output signal being responsive to said electronic signal variation.

4,285,230

BOTTLE TESTER

Thomas S. Hartness, Greenville, S.C., assignor to Hartness International, Inc., Greenville, S.C.

Filed Sep. 4, 1979, Ser. No. 71,942
Int. Cl.³ G01M *3/26*
U.S. Cl. 73—49.4 5 Claims



1. A hand-held apparatus for manually testing the physical characteristics of the wall of a bottle by pressurizing fluid carried therein, said bottle having a main body with a neck integral therewith which terminates in an opened top, said apparatus comprising:

an elongated cylinder;

a bore extending axially through said elongated cylinder;

threads carried on a portion of said cylinder surrounding said bore;

a piston carried in said elongated bore and extending out an upper end of said cylinder;

threads carried on a portion of said piston meshing with said threads carried on a portion of said cylinder surrounding said bore;

means for attaching a lower end of said cylinder to the top of said bottle with said piston being axially aligned with the top of said bottle;

seal means sealing said cylinder to the top portion of said bottle; and

hand operated means for rotating said piston feeding a lower end of said piston into said bottle gradually pressurizing said fluid as said piston is inserted into said bottle;

whereby the effect of pressure on the wall of said bottle can be monitored.

4,285,231

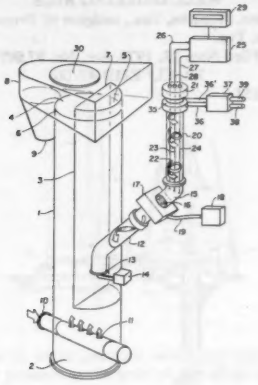
APPARATUS FOR MEASURING THE PARTICLE SIZE RANGE IN A SUSPENSION

Kjell R. A. Eriksson, Strandvagen 3, S-542 00 Mariestad, Sweden

Filed Jan. 16, 1980, Ser. No. 112,426
Claims priority, application Sweden, Nov. 27, 1979, 7909782
Int. Cl.³ G01N *15/00*
U.S. Cl. 73—63 9 Claims

1. Apparatus for measuring the particle size range in a suspension, comprising a vertical through-flow passage for the suspension, said passage including a space in which a stationary quantity of suspension from the through-flow passage can collect; a measuring tube connected to said space and being provided with a filter which allows liquid through and traps a plug of suspension particles, and a sealing member to cover and uncover the end of said measuring tube at the end by said space; means in said measuring tube to separate a suspension layer of predetermined thickness from said plug in front of the

filter thereby producing a gap in front of the layer to permit the passage of liquid under predetermined pressure through the



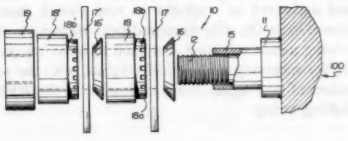
layer and the filter; and means for measuring the flow rate of said liquid through said layer.

4,285,232

MONITOR ASSEMBLY FOR ELECTROCHEMICAL CORROSION PROTECTION OF STAINLESS STEEL BLEACH PLANT WASHERS

Andrew Garner, Pointe Claire, Canada, assignor to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Mar. 20, 1980, Ser. No. 132,026
Int. Cl.³ G01N *17/00*
U.S. Cl. 73—86 **16 Claims**



1. A monitor assembly for monitoring the effectiveness of cathodic crevice corrosion protection of a stainless steel member, comprising:

(a) a mount adapted to be electrically connectable to said stainless steel member, said mount being adapted to be rigidly and fixedly secured to said stainless steel member, said mount having a threaded exposed end;

(b) an electrically non-conductive sleeve disposed on said mount, said sleeve serving to isolate the mount electrically;

(c) a first frusto-conical centrally apertured metal spacer disposed on said sleeve, in electrical contact with said mount;

(d) a first stainless steel centrally apertured monitor coupon disposed on said sleeve in electrical contact with said first frusto-conical metal spacer;

(e) a first segmented electrically non-conductive centrally apertured disc disposed on said sleeve in non-electrical contact with said first monitor coupon;

(f) a second frusto-conical centrally apertured metal spacer, identical with said first frusto-conical metal spacer, disposed in non-electrical contact with said first segmented disc;

(g) a second stainless steel centrally apertured monitor coupon identical to said first stainless steel monitor coupon, disposed on said sleeve, in contact with said second frusto-conical metal spacer;

(h) a second electrically non-conductive centrally apertured segmented disc, identical with said first segmented disc, disposed on said sleeve in non-electrical contact with said second stainless steel monitor coupon; and

(i) a centrally apertured locknut threaded onto said mount and holding the members on said sleeve under a predetermined, substantially constant, mechanical stress;

wherein, said metal mount and said metal spacers are formed of any metal with sufficient mechanical and chemical stability to withstand the corrosive environment and the mechanical stress;

wherein, said electrically non-conductive sleeve and segmented discs are formed of an electrically non-conductive material having sufficient mechanical and chemical stability to withstand the corrosive environment and the mechanical stress;

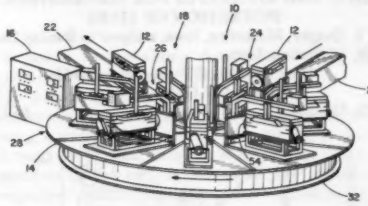
and wherein, the face-to-face contact of said first coupon with said first spacer and said first segmented disc is identical to the face-to-face contact of said second coupon with said second spacer and said second segmented disc.

4,285,233

SYSTEM FOR HOT TESTING ENGINES

Philip E. Swis, Armada, Mich., assignor to Sun Electric Corporation, Crystal Lake, Ill.

Filed Oct. 5, 1979, Ser. No. 82,313
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 **14 Claims**



1. A system for testing an engine comprising, in combination:

test means for testing said engine;

pallet means for supporting said engine; and

a dial index adapted to receive said pallet means at a loading station and adapted to discharge said pallet means at an unloading station, said dial index advancing said engine from said loading station to said test means and then to said unloading station at a predetermined index rate, said predetermined index rate being defined by a series of indexes by said dial index and a series of predetermined stationary periods between each of said indexes, whereby said engine is normalized upon arrival at said test means.

4,285,234

LOAD-MEASURING DEVICES

Basily B. Basily, Cairo, Egypt; Dennis H. Sansome, Sutton Coldfield, and Gerald M. Jones, Trimpley, both of England, assignors to National Research Development Corporation, London, England

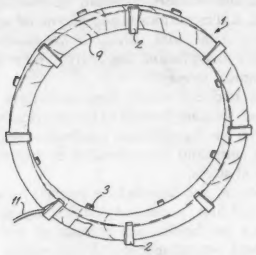
Filed Nov. 20, 1979, Ser. No. 96,149
Claims priority, application United Kingdom, Nov. 23, 1978, 45768/78
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—862.65 **10 Claims**

1. A load-measuring device comprising a ring-shaped body,

at least three circumferentially-spaced first axial projections presenting sectorially-aligned surfaces operatively mounted so that said surfaces engage a first of the two axial faces of said ring-shaped body;

at least three circumferentially-spaced second axial projections presenting sectorially-aligned surfaces operatively

mounted so that said surfaces engage the second and opposite of said axial faces of said ring-shaped body at locations staggered relative to those of said first axial projection;



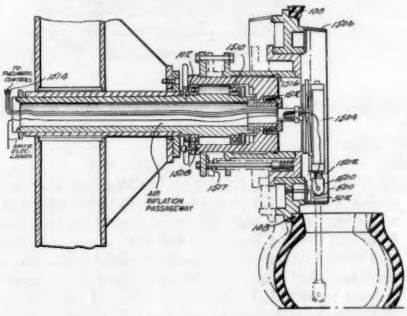
means to detect the strain imposed upon said ring-shaped body when said ring-shaped body is distorted elastically to sectorially-undulating shape by opposed axial loads applied to said ring-shaped body through said first and second axial projections.

4,285,235

METHOD AND APPARATUS FOR NON-DESTRUCTIVE INSPECTION OF TIRES

Doyle L. Dugger, Muscatine, Iowa, assignor to Bandag Incorporated, Muscatine, Iowa

Filed Apr. 19, 1979, Ser. No. 31,961
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—146 **16 Claims**



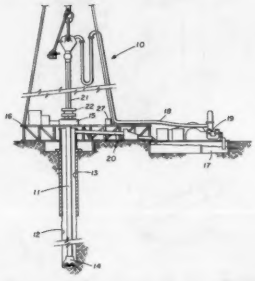
4. A nondestructive tire testing apparatus comprising:
opposing circular rings adapted to sealingly engage the corresponding rims of said tire when placed therebetween,
tire inflation means for inflating said tire after engagement by said rings,
at least one ultrasonic acoustic receiver disposed for operation outside said tire,
at least one ultransonic acoustic transmitter disposed for operation inside said tire, and
adjustable transmitter mounting means mechanically mounted between said rings for retracting said transmitter radially toward the center of the circular rings while mounting and de-mounting the tire from between said rings and for extending said transmitter radially away from the center of the circular rings and toward the tire tread wall to a fixed active position during a testing cycle
said receiver and transmitter being fixed with respect to one another and relative to the environment of said apparatus during said testing cycle.

4,285,236

ROTARY TORQUE AND RPM INDICATOR FOR OIL WELL DRILLING RIGS

Loring C. Chien, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 23, 1979, Ser. No. 97,007
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **4 Claims**



1. In a rotary drilling rig having a rotary drilling string of the type employed in the rotary method of drilling wells, the improvement comprising:
first transmitting means mounted at a fixed location on said drilling rig for continuously transmitting a first modulated signal;
receiving means mounted on the drilling string for receiving said modulated signal;
electronic switch means connected to said receiving means and periodically placed in an On state when the magnitude of the modulated signal exceeds a predetermined level;
second transmitting means mounted on said drilling string and activated in response to said switch means being placed in an On state to periodically transmit a signal; and
receiving means mounted at a fixed location on said drilling rig for receiving said periodic signal, with the number of pulses of said signal being indicative of the RPM of said drilling string.

4,285,237

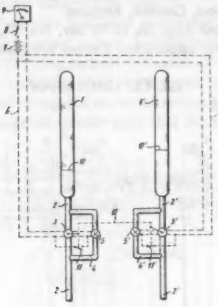
DEVICE FOR ACCURATE SUBAQUEOUS MEASUREMENTS

Anthony H. Romijn, Vlaardingen, Netherlands, assignor to Hollandsche Beton Groep N.V., Rijswijk, Netherlands

Filed Jan. 21, 1980, Ser. No. 114,012
Claims priority, application Netherlands, Jan. 29, 1979, 7900690
Int. Cl.³ G01F *23/18*; G01L *19/08*
U.S. Cl. 73—300 **3 Claims**

1. Device for accurate measurements of the vertical displacement of a reference point under water, said device comprising a pressure-difference recorder provided at the region of the reference point, said recorder being disposed in a tube and dividing said tube in two parts, one of which being in communication with an air-filled chamber and the other part may communicate with the water pressure, said parts being connected to each other by a pipe bridging the pressure recorder, and a valve is disposed in said pipe, in that the tube portion facing away from the air chamber is open and the valve has only two positions, i.e. open and closed, whereby in the open position the open tube portion is in communication with the air chamber, said air chamber being disposed vertically above the pressure recorder and the valve comprises an electromagnetic operating element which is provided in a circuit that can be

opened and closed, said circuit being also provided with the pressure recorder and a measuring device, and that the air



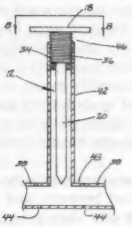
chamber has an initial pressure which corresponds with the atmospheric pressure at the level of the water-surface.

4,285,238

DEVICE FOR MEASURING LUBRICATING OIL TEMPERATURE SUPPLIED TO AN INTERNAL COMBUSTION MOTORCYCLE ENGINE

Thomas E. Wilson, 12889 E. Eleven Mile Rd., Warren, Mich. 48093

Filed Apr. 25, 1978, Ser. No. 899,803
Int. Cl.³ G01K *1/14, 13/02*
U.S. Cl. 73—346 **5 Claims**



1. A device for measuring the temperature of engine lubricating oil circulating through the oil lubricating system of an internal combustion engine, said device comprising:

an appropriate aperture communicating with an oil flow lubricating passage of said oil lubricating system proximate an area of said engine requiring lubrication;

a thermometer having a closure body, said closure body mounted to said aperture, said thermometer further having temperature indicator means and a temperature sensing stem extending from said temperature indicator means with said closure body interposed said temperature indicator means and said temperature sensing stem, said temperature indicating means having a dial with indicia corresponding to various temperatures at one end and an opposite end mounted contiguous to said closure body and perpendicular to said temperature sensing stem, said closure body having a sealing surface configured to cooperate with said aperture for isolating the engine lubricating oil from particulate contaminants originating from sources external to said passage, said thermometer further being positioned in said aperture with said temperature indicator means disposed to the exterior of said engine such that irrespective of the angular orientation of said closure body in said aperture, said dial is readable by a viewer positioned above said engine, said thermometer being attached to said engine with said temperature sensing means projecting through said aperture and into said oil flow lubricating passage of said oil lubricating system in at least partially submerged relationship with oil flowing through the oil flow lubricating passage of said lubricating system; and

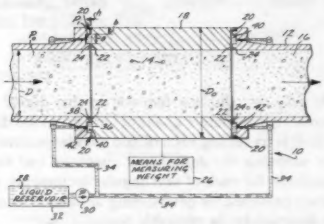
means for indicating the indicia corresponding to the temperature of the oil flowing in said oil flow lubricating passage.

4,285,239

APPARATUS FOR MEASURING VARYING DENSITY OF A SLURRY FLOWING IN A PIPELINE

Otto R. Heine, 13372 Calle Colina, Poway, Calif. 92064, and Peter M. Riede, 8257 Via Mallorca, La Jolla, Calif. 92037

Filed May 1, 1980, Ser. No. 145,428
Int. Cl.³ G01N *9/06*; G01F *1/74*
U.S. Cl. 73—434 **27 Claims**



8. A device for measuring density of a slurry flowing through a pipe, the device comprising:

a pipe through which the slurry may flow;

a section of the pipe, the section having two ends, each end being coupled to the pipe so that the slurry may flow through the section, each end of the section comprising a precision formed surface, ends of the pipe adjacent to the respective ends of the pipe section including precision formed surfaces respectively complementary to the precision formed surfaces provided on the ends of the pipe section, the adjacent precision formed surfaces on the ends of the pipe section and on the adjoining ends of the pipe comprising hydrostatic bearings;

first means for measuring the weight of the pipe section, said weight including the weight of the slurry flowing through the pipe section;

second means adapted for providing a fluid in the hydrostatic bearing at a pressure higher than the pressure of the slurry flowing in the pipe, and

third means for coupling and operatively positioning the pipe section to the pipe.

4,285,240

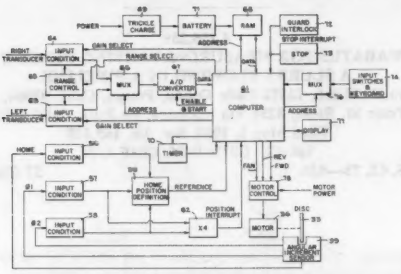
WHEEL UNBALANCE MEASUREMENT SYSTEM AND METHOD

Kenneth S. Gold, Canoga Park, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 11, 1980, Ser. No. 111,159
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **26 Claims**

7. In combination with apparatus for measuring unbalance in a rotatable body wherein at least one force transducer is disposed to provide an electrical signal indicative of periodic unbalance forces coupled thereto through a shaft adapted to support the rotatable body for rotation thereon, and wherein an analog-to-digital converter is coupled to receive the electrical signal and to provide a digital word output corresponding thereto, the improvement comprising means for controlling said analog-to-digital converter to provide said digital words at a predetermined number of angular increments during each revolution of the shaft, a memory containing a plurality of

stored digital sine and cosine representative values, ones of said digital sine and cosine representative values corresponding to predetermined ones of said predetermined number of angular increments, means for modifying each of said digital words in accordance with the corresponding stored digital sine and cosine representative values and for limiting each modification



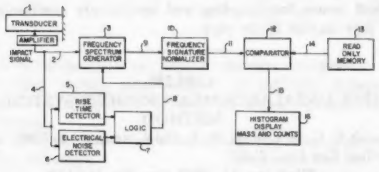
to include only one addition function so that digital sine and digital cosine representative quantities are provided during the time the shaft is traversing each of said angular increments, and means for summing the digital sine quantities and the digital cosine quantities for each of said angular increments, whereby digital data is provided for determining unbalance force magnitude and direction in the rotatable body.

4,285,241

METHOD AND APPARATUS FOR THE DETERMINATION OF THE MASS OF AN IMPACTING OBJECT

John R. Smith, Monroeville; William Ciaramitaro, Murrysville, and Raj Gopal, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1979, Ser. No. 57,524
Int. Cl.³ G01H *13/00*; G01M *7/00*
U.S. Cl. 73—572 **6 Claims**



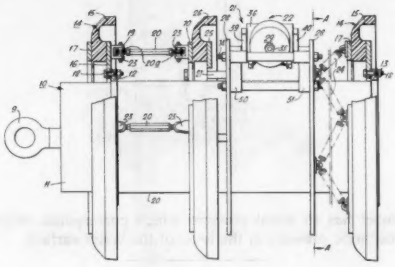
1. A method of detecting the mass of an impacting object behind a wall comprising the steps of: deriving an electric signal representative of an acoustic signal generated by the impact of said object; converting said electric signal into a frequency spectrum signal; comparing said frequency spectrum signal with a set of reference data each having a frequency spectrum indicative of the mass of an impacting sample for identifying matching with reference data from said set having the same relative importance in the spectrum; and providing an indication of the mass associated with such matching reference data which is indicative of the mass of said impacting object.

4,285,242

PIPE INSPECTION APPARATUS

Geoffrey C. Braithwaite, Wantage, England, assignor to British Gas Corporation, London, England

Filed Aug. 20, 1979, Ser. No. 67,790
Claims priority, application United Kingdom, Feb. 28, 1979, 07149/79
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—623 **12 Claims**



1. A pipe inspection apparatus which is capable of moving along the bore of a pipe, said apparatus including
an elongated vehicle having a forward end and a rearward end;
a first annular alignment means attached to the side of said vehicle near its forward end to help position said vehicle within the pipe to be inspected;
a second annular alignment means attached to the side of said vehicle near its rearward end to help position said vehicle within the pipe to be inspected;
a movable assembly means positioned around said vehicle between said first and second annular alignment means, said movable assembly means including
first and second spaced apart annular carrier plates, said first annular carrier plate being located nearer said first annular alignment means than said second annular carrier plate,
a plurality of circumferentially spaced apart inspection means mounted between said first and second annular carrier plates near their peripheries which are capable of examining a circumferential band of the pipe wall,
an annular centralizing member positioned between said first annular alignment means and said first annular carrier plate, and
a number of connection means fixedly connecting said annular centralizing member with said first annular carrier plate; and
a plurality of circumferentially spaced apart link means connecting said first annular alignment means with said annular centralizing member to function to constrain the movement of said assembly means in a direction towards and away from said vehicle.

4,285,243

ULTRASONIC PIPE INSPECTION APPARATUS

John C. Collingwood, Didcot, England, assignor to British Gas Corporation, London, England

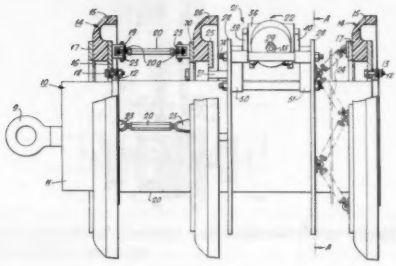
Filed Aug. 20, 1979, Ser. No. 67,791
Claims priority, application United Kingdom, Feb. 28, 1979, 07148/79
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—623 **10 Claims**

1. A pipe inspection apparatus which is capable of moving along the wall of a pipe, said apparatus including
an elongated, generally tubular vehicle,
at least one inspection means mounted on said vehicle, each said inspection means including
a support means, one end of said support means being

pivotally mounted to the side of said vehicle and the second end thereof being radially movable towards and away from the side of said vehicle,

an elongated spindle rotatably connected to said second end of said support means, said elongated spindle extending in the longitudinal direction of said vehicle,

an elongated mounting means connected to said elongated spindle, said elongated mounted means being connected to said elongated spindle such that the portions thereof



on either side of said elongated spindle are of equal length,

two hollow wheels respectively rotatably mounted on opposite ends of said elongated mounting means so as to be capable of contacting a pipe wall and rolling therealong in a longitudinal direction thereof, and

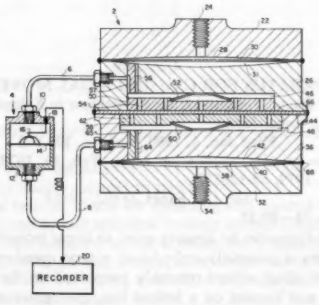
at least one ultrasonic transducer mounted within each said hollow wheel such that each transducer is aligned in a predetermined position relative to the geometry of the pipe in which said vehicle moves.

4,285,244

NON-SYMMETRICAL OVERLOAD PROTECTION DEVICE FOR DIFFERENTIAL PRESSURE TRANSMITTER

Norman E. Green, Warrington, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 13, 1980, Ser. No. 121,033
Int. Cl.³ G01L *9/00*
U.S. Cl. 73—720 **10 Claims**



1. A differential pressure transmitter comprising

a housing having a central cavity with first inlet means for a first pressure signal and second inlet means for a second pressure signal,

means for dividing said cavity for isolating said first signal from said second signal within said central cavity of said housing including a flexible diaphragm,

first biasing means for subjecting said diaphragm to a bias force in a first direction corresponding to the direction of force produced by said first pressure signal,

second diaphragm biasing means for subjecting said diaphragm to a second bias force opposite in direction to said first bias force and in the direction of said second pressure signal, and

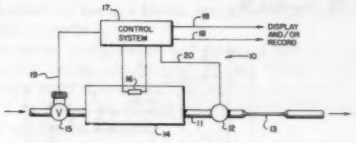
means for proportioning located adjacent to said diaphragm to affect the net effect of said first and second bias force on said diaphragm to produce said net effect of said first and second bias forces in a predetermined nonsymmetrical ratio.

4,285,245

METHOD AND APPARATUS FOR MEASURING AND CONTROLLING VOLUMETRIC FLOW RATE OF GASES IN A LINE

Lyn R. Kennedy, Dallas, Tex., assignor to Precision Machine Products, Inc., Dallas, Tex.

Filed Dec. 6, 1979, Ser. No. 100,918
Int. Cl.³ G01F *1/34*
U.S. Cl. 73—861 **24 Claims**



1. A method for determining the volumetric flow rate of gas flowing in a line comprising:

imposing uniformity of flow rate on said gas at a downstream point in said line;

temporarily restricting gas flow in said line at a point upstream from said downstream point;

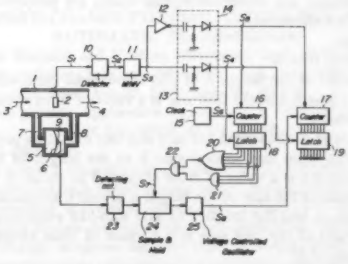
and measuring the rate of pressure fall in said line between said upstream and downstream points during at least part of the time of restricted gas flow at said upstream point, said rate of pressure fall being substantially proportional to the volumetric flow rate of the gas.

4,285,246

INTAKE AIR FLOW RATE DETECTOR

Toru Kita, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 4, 1979, Ser. No. 100,706
Claims priority, application Japan, Dec. 6, 1978, 53/149929
Int. Cl.³ G01F *1/32, 1/86*
U.S. Cl. 73—861.03 **3 Claims**



1. An intake air flow rate detector of an internal engine using a Karman vortex sensor provided in an intake system of the engine for measuring the amount of the intake air comprising:

first means for delivering a first signal each time an output of

the Karman vortex sensor assumes a predetermined period or is within a predetermined frequency range,

second means for detecting a dynamic pressure of the intake air or a differential pressure between two points in said intake system;

third means for sampling and holding an output of said second means at each time of delivery of the first signal, and

fourth means responsive to outputs of said Karman vortex sensor and said third means for delivering an output signal which has a value corresponding to the output of the Karman vortex sensor after density compensation.

4,285,247
FLOW MEASURING DEVICE

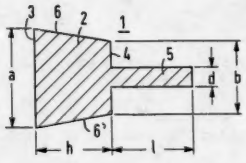
Martin Klobe, Karlsruhe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 58,768

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832142

Int. Cl.³ G01F *1/32*

U.S. Cl. 73—861.24 **14 Claims**



1. A flow measuring device according to the principle of the Karman vortex path which comprises:

a vortex generating choke body having a prismatic part of trapezoidal cross-section of a height h, said prismatic part of trapezoidal cross-section having a first side of a length a and a section side of a length b in parallel alignment with said first side, and said choke body having a slab-like extension of a length l and a maximum width d projecting away from said second side; and

pressure pickups positioned inside said prismatic part of the choke body, such that said pressure pickups can measure the periodic pressure variations which are generated by the vortex separation, said pressure pickups comprising at least two chambers positioned in the side walls of said prismatic part of trapezoidal cross-section, each of said chambers is covered by an element constructed of a pressure deflectable material, and each of said chambers is connected in a pressure conducting manner with transducers for converting the deflections of said deflectable element into electrical signals which are proportional to said deflections;

wherein:

b is less than a;

the ratio of the height h of said trapezoidal cross-section to the length a of the first side is a value of from about 0.5 to about 1;

The ratio of the length l of said slab like extention projecting away from said second side b to the length of the first surface a is a value of from about 0.5 to about 1;

the ratio of the sum of the height h of said trapezoidal cross-section and the length l of said slab-like extention to the length of the first side a is a value of from about 1.2 to about 1.8;

the ratio of the length of said second side b to the length of said first side a is a value of from about 0.5 to about 0.7; and the ratio of the width d of said slab-like extension to the length a of said first side is a value of from about 0.15 to about 0.35.

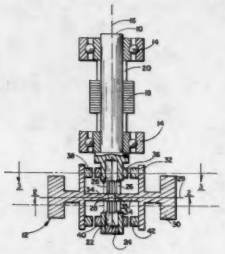
4,285,248
TWO-DEGREE-OF-FREEDOM GYROSCOPE

Raymond Noar, Bellflower, and Louis J. Blache, Dana Point, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 17, 1979, Ser. No. 85,576

Int. Cl.³ G01C *19/22, 19/24*

U.S. Cl. 74—5 F **10 Claims**



1. A gyroscope, comprising:

a shaft mounted for rotation about a central shaft axis;

a wire mounted on and held taut by said shaft for rotation therewith, wherein said wire is directed along said central shaft axis;

a substantially cylindrical rotor having a center of rotation, wherein said rotor is attached to and suspended from said wire at said center of rotation; and

magnet means for centering said rotor and for restraining radial displacement of said rotor, wherein said magnet means is mounted for rotation about said central shaft axis with said shaft and said rotor;

whereby there is formed a frictionless universal joint for said rotor, wherein said joint is operable at any arbitrary orientation relative to gravity, said joint permitting rotation of said rotor about any axis perpendicular to said central shaft axis while restraining axial and radial replacement of said rotor.

4,285,249
APPARATUS FOR CAUSING AXIAL MOVEMENT

Takeshi Kume, Amagasaki, Japan, assignor to Kabushiki Kaisha I.T.L., Kobe, Japan

Filed Jan. 4, 1980, Ser. No. 109,563

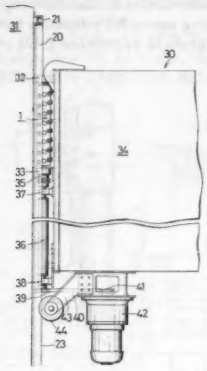
Claims priority, application Japan, Feb. 19, 1979, 54-18594; Sep. 18, 1979, 54-120533

Int. Cl.³ F16H *27/02, 29/02*

U.S. Cl. 74—89.15 **4 Claims**

1. An apparatus for causing axial, or linear movement which comprises a generally cylindrical rotary member having a series of idling rollers rotatably supported on the periphery thereof and located on a helical line, the center of the helix being on the axis of said rotary member, and a fixed member having a generally semi-cylindrical wall formed with a series of slots thereacross which lie on a helical line coaxial with said semi-cylindrical wall and having the same pitch as said helical line on which said rollers are located, each of said rollers having its axis extending radially of said rotary member and being adapted to roll through said slots when said rotary member is rotated, whereby said rotary member moves axially along said semi-cylindrical wall of said fixed member, each of

said rollers having a peripheral groove and a radial flange such that said peripheral groove rides on one edge of one of said



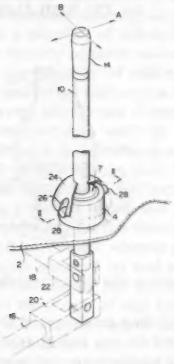
slots across said semi-cylindrical wall while said flange engages the outer wall of said edge.

4,285,250

CONTROL LEVER FOR A TRANSMISSION

Takehiko Iizuka, and Kunio Ui, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jan. 18, 1980, Ser. No. 113,315
Claims priority, application Japan, Jan. 23, 1979, 54-5974[U]
Int. Cl.³ G05G *9/02, 9/12*
U.S. Cl. 74—473 P **4 Claims**



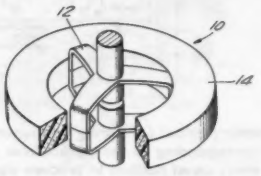
1. A control lever for a transmission of a vehicle, comprising:
- a frame of the vehicle;
- a housing fixedly secured to said frame;
- spherical bearing means for mounting said control lever on said housing, said spherical bearing means comprising an outer race mounted on said housing, and a spherical bushing mounted on said control lever within said outer race so as to allow a sliding contact of said spherical bushing with said outer race;
- a pair of rod means pivotally connected to said control lever means, said rod means being arranged at right angles with each other;
- a cover fixedly secured to said control lever, said cover having a pair of guide slots formed therein positioned diametrically opposite sides to each other relative to said control lever; and
- a pair of guide pins fixedly secured to said housing, said guide pins being aligned with each other in a direction parallel to one of said rod means and adapted to be inserted within said respective guide slots.

4,285,251

RIM FOR USE IN FLYWHEELS FOR KINETIC ENERGY STORAGE

Bruce E. Swartout, San Juan Capistrano, Calif., assignor to U.S. Flywheels, Inc., Irvine, Calif.

Filed Sep. 13, 1978, Ser. No. 942,112
Int. Cl.³ G05G *1/00*
U.S. Cl. 74—572 **16 Claims**



1. A flywheel for use in a kinetic energy storage apparatus, the flywheel comprising:
- a double spider configuration hub having a pair of coaxial, oppositely facing, spaced-apart convex surfaces of substantially equal dimensions, said surfaces being interconnected by a plurality of legs spaced equidistantly around the perimeter of said hub;
- each of said legs having a circumferential outward facing surface for support of a cylindrical flywheel rim, the axis of which is collinear with axes of said convex surfaces;
- a unitary, thick flywheel rim supported on said leg surfaces, said rim having a combination of fiber and epoxy matrix wound into a substantially cylindrical configuration having an inner radius R1 and an outer radius R2 and having at said outer radius, R2, a mass density per unit volume $\rho 0$ and a hoop elastic modulus $E\theta^*$;
- the mass density per unit volume, $\rho(r)$, of said rim being defined as a function of rim radius as follows:

$$\rho(r)=\rho 0\,(r/R2)^{-2};\text{ and}$$

the hoop elastic modulus $E\theta(r)$ of said rim being defined as a function of rim radius as follows:

$$E\theta(r)=E\theta^*\,(r/R2)^{1+\nu}$$

where
$R1 \leqq r =$ rim radius $\leqq R2$; and
$0 \leqq \nu =$ constant $\leqq 0.5$.

4,285,252

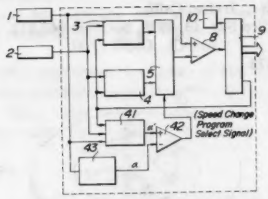
SPEED-CHANGE CONTROL SYSTEM FOR AN AUTOMATIC TRANSMISSION

Kiyoshi Yamaki, and Yoshiro Morimoto, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 25, 1979, Ser. No. 60,672
Claims priority, application Japan, Sep. 5, 1978, 53/108041
Int. Cl.³ B60K *41/04, 41/06*
U.S. Cl. 74—866 **4 Claims**

1. In a speed change control system for an automatic transmission including a vehicle speed sensor for producing signals corresponding to vehicle speeds, an engine load sensor for generating signals corresponding to engine loads, at least one speed change program memory circuit storing speed change programs including reference change speeds corresponding to the signals from the engine load sensor and generating signals corresponding to said reference change speeds, a comparator for comparing the signal from the vehicle speed sensor with a signal depending upon the signal corresponding to said refer-

ence change speed from said speed change program memory circuit, and a speed change control circuit for producing a signal for changing said transmission into a determined speed position in response to an output from said comparator, the improvement comprising a differentiation unit for differentiating the signal from the vehicle speed sensor to produce a signal corresponding to an actual acceleration, a programmed acceleration memory circuit for storing programmed accelerations obtained corresponding to the signals from said engine load sensor at every speed position to produce signals corresponding to said programmed accelerations, and means for changing said speed change programs in response to differences between the signals corresponding to said actual acceleration and to said programmed acceleration.

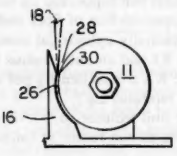


4,285,253

MECHANICAL STEEL FOR SHARPENING BLADES

Theodore L. Edling, P.O. Box 593, Bethel Island, Calif. 94511

Filed Jan. 24, 1980, Ser. No. 114,900
Int. Cl.³ B21K *11/02*; B24B *3/54*
U.S. Cl. 76—84 **9 Claims**



1. A mechanical steel comprising:

a hardened disk of a hardness substantially equal to or greater than the hardness of knives to be sharpened, said disk having a smooth transversely rounded peripheral edge,

drive means for rotating said disk about its axis, and

sloped knife-guiding means disposed to partially receive said disk, the slope of said knife-guiding means forming an angle of substantially 40 degrees with a tangent to the disk at the point where its rotation exits the area where the disk is received in the knife-guiding means.

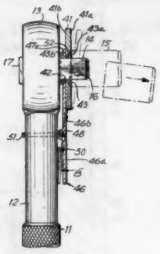
4,285,254

REVERSIBLE DRIVE RATCHET SOCKET REMOVER ASSEMBLY

Richard F. Romeo, Kings Park, N.Y., assignor to Excelsior Tool Corp., Jehrico, N.Y.

Filed Dec. 6, 1979, Ser. No. 101,048
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—58.1 **14 Claims**

1. A reversible drive ratchet socket remover, adapted to be attached to a reversible drive ratchet wrench and cooperate with a driving stud of said reversible drive ratchet wrench, comprising a disengagement plate means cooperatively disposed in a first position and intermediate said wrench and a socket, when said socket is releasably secured to said stud, a ratchet drive spinner operatively coupled to said disengagement plate means so that said ratchet drive spinner is cooperatively disposed on said driving stud in rotating engagement therewith, said ratchet drive spinner being disposed in said first position by said disengagement plate means when said socket is releasably secured to said stud, said disengagement plate means including mounting means for releasably mounting said disengagement plate means to a reversible drive ratchet wrench and



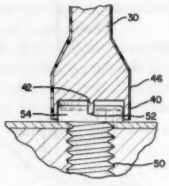
for permitting said disengagement plate means and said ratchet drive spinner to be displaced from said first position into engagement with said socket when said socket is releasably secured to said stud to thereby effect removal of said socket from said stud.

4,285,255

SAFETY SCREWDRIVER

Carl T. Winfrey, 115 Harmony St., Winston-Salem, N.C. 27105

Filed Jan. 28, 1980, Ser. No. 116,286
Int. Cl.³ B25B *15/00*
U.S. Cl. 81—451 **3 Claims**



1. The combination of a driver and slot head fastener comprising:

(a) a driver including an elongated shank portion having a handle secured to one end in axial alignment therewith and a hollow tubular extension in axial alignment thereto at the end opposite said handle;

(b) said slot head fastener having a threaded shank and a head of a prescribed thickness secured to one end of said shank, said head having a slot defined in the upper surface thereof, said slot extending a prescribed depth into and transversely of said head;

(c) said tubular extension of said driver including an elongated flat blade positioned therein such that the terminal edge of said blade is recessed a prescribed distance within said tubular extension;

(d) said prescribed distance of said blade recession being so related to the thickness of said fastener head and the depth of said slot that when said blade is positioned in said slot, said tubular member substantially encases said fastener head with the terminal edge of said tubular member positioned in a plane parallel to and intermediate of the upper and lower surfaces of said fastener head;

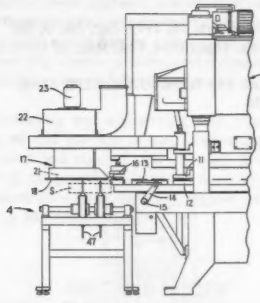
(e) whereby said tubular member remains clear of the surface into which said fastener is being inserted.

4,285,256

FIN COLLECTION AND TRANSPORT APPARATUS

Lawrence A. Franks, Sturgis, Mich., assignor to Burr Oak Tool & Gauge Company, Sturgis, Mich.

Division of Ser. No. 905,022, May 11, 1978, Pat. No. 4,195,540.
This application Sep. 24, 1979, Ser. No. 78,522
Int. Cl.[3] B23Q 7/16; B26D 7/06; B65H 35/06
U.S. Cl. 83—100 4 Claims



1. In a ribbon-type fin forming apparatus for simultaneously forming a plurality of thin platelike fins arranged in adjacent side-by-side relationship, said apparatus including upper and lower opposed platens having means associated therewith for causing the sheet material as fed therebetween to be severed into a plurality of elongated strips, drive means for intermittently advancing the sheet material through the apparatus so that the strips are advanced outwardly of the apparatus, a cutoff device for simultaneously severing the plurality of side-by-side strips to form a plurality of side-by-side fins, and a suction head disposed directly adjacent said cutoff device for receiving thereunder the plurality of side-by-side fins after severing thereof from said strips, said suction head including a lower suction plate having plural rows of apertures extending therethrough and communicating with an interior suction member disposed thereabove, said fins being positionable adjacent the lower surface of said suction plate substantially between the adjacent rows of apertures, said suction head including means for creating a suction within said chamber so that external air flows upwardly past the fins through said apertures into said chamber, the improvement wherein said suction head includes alignment means mounted on said suction head and cooperating with said fins during the discharge thereof for guiding the downward movement of said fins onto a fin collecting device which is positioned below said suction head, said alignment means including a support vertically movably positioned within said suction chamber and having a plurality of alignment pins fixed thereto and projecting downwardly therefrom, said pins being slidably positioned within openings which extend downwardly through said suction plate, said openings being disposed at locations whereby they are covered by said fins so that downward projection of said pins cause them to project through apertures in said fins, and drive means connected to said support for causing vertical reciprocation thereof.

4,285,257

APPARATUS FOR SEPARATING BATTERY PLATES

William J. Eberle, and Timothy M. Reber, both of Reading, Pa., assignors to General Battery Corporation, Reading, Pa.

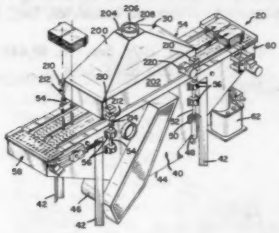
Filed Feb. 7, 1980, Ser. No. 119,508
Int. Cl.[3] B23D 45/00
U.S. Cl. 83—167 17 Claims

1. An apparatus for separating battery plates which are joined about a center line, said apparatus comprising:

a generally rectangular frame;

conveyor means disposed within said frame, said conveyor means having at least two space apart sections;

registration means mounted on said frame and between said spaced apart sections for aligning said center line of said battery plates over said space, said registration means further being movable between a first position above the upper plane of said conveyor means and a second position below the upper plane of said conveyor means;



separator means disposed between said spaced apart sections and in line with said registration means, said separator means further having a portion thereof which extends above the upper plane of said conveyor means; and

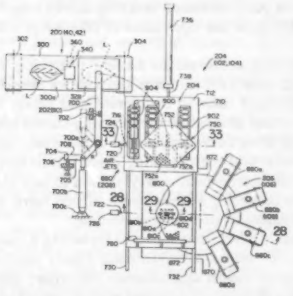
drive means for activating said conveyor means and said separator means.

4,285,258

DEVICE FOR TRANSLATING AND ROTATING A CUTTING PLATEN WITH RESPECT TO A RECIPROCAL CUTTER

David J. Logan, Glastonbury, and Robert J. Pavone, South Windsor, both of Conn., assignors to Gulf & Western Corporation, New York, N.Y.

Division of Ser. No. 902,263, May 2, 1978, Pat. No. 4,226,148.
This application Aug. 29, 1979, Ser. No. 70,723
Int. Cl.[3] A24G 1/04
U.S. Cl. 83—410 12 Claims



1. A device for translating and rotating a cutting platen for a flat workpiece with respect to a reciprocable cutter, said device comprising first, second and third guide ways on said platen, said first and second guide ways extending generally in a first direction and said third guide way extending in a second direction at a known angle to said first direction; first, second and third drive elements are slidably received in said first, second and third guide ways respectively; first drive means for shifting said first drive element in a drive direction generally transverse to said first guide way; second drive means for shifting said second drive element in a drive direction generally transverse to said second guide way; third drive means for shifting said third drive element in a drive direction generally

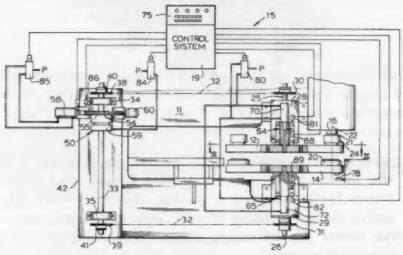
transverse to said third guide way; and control means for shifting said first, second and third drive means a selected distance in said drive directions to cause corresponding movement of said platen with respect to said cutter.

4,285,259

TURRET INDEX SYSTEM

Ross R. Jelinek, North Tonawanda; Victor T. Carbone, Cheektowaga, both of N.Y., and Paul R. Brown, Walnut Creek, Calif., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Aug. 21, 1979, Ser. No. 68,445
Int. Cl.³ B26F *1/04*
U.S. Cl. 83—552 **7 Claims**



1. A turret index system for a punching machine having spaced apart upper and lower turret assemblies, each having a plurality of punching elements carried thereon at equally spaced turret punching stations with each upper and lower station providing functionally complementary punching elements which are rotatable for positioning in alignment with a machine punching axis, wherein the improvement comprises:

a rotary drive means being drivably connected to said upper and lower turret assembly for synchronously driving said turret assemblies;

said rotary drive means includes an index gear and said reciprocating drive means includes a rack which meshes with said index gear and being moved by a power cylinder through a predetermined indexing stroke length to rotate said index gear the equivalent of one turret station spacing;

a reciprocating drive means having a driving connection with said rotary drive means and a shock absorber associated with said rack to decelerate said turret assemblies during a final portion of the indexing stroke length.

a releasable drive couple means for driving said rotary drive means from said reciprocating drive means and arranged to transmit incremental rotary motion to said rotary drive means to indexably advance both of said turret assemblies the equivalent of one station spacing;

said releasable drive couple means including a clutch means arranged to transmit incremental rotary motion to said rotary drive means and wherein the rotary drive means includes a drive shaft carrying spaced sprockets thereon, upper and lower roller chains indexing with said sprockets, said chains each having an operative drive connection with one of said turret assemblies for driving each of said turret assemblies simultaneously from said rotary drive means, said drive shaft being positioned remote from said turrets;

a shot pin means arranged to lock the indexed position of said turret assemblies and provide required corrective repositioning movements to achieve accurate positioning of said turret assemblies relative to said machine punching axis; and

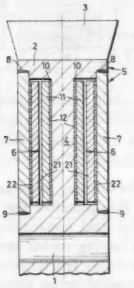
a control system to sequentially control the operation of said rotary drive means, the reciprocating drive means, the releasable drive couple means and said shot pin means whereby selected turret assembly punching stations are accurately indexed relative to said machine punching axis.

4,285,260

ROTATABLE ARTICLE, SUCH AS A TOOL PROVIDED WITH MEANS FOR DAMPING VIBRATION

Ernst Salje, Schulheide 4, D 2106 Bendestorf, Fed. Rep. of Germany, and Ulrich Bartsch, Braunschweig, Fed. Rep. of Germany, assignors to Ernst Salje, Bendestorf, Fed. Rep. of Germany

Filed Jan. 15, 1979, Ser. No. 3,786
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1978, 2801811
Int. Cl.³ B27B *33/08*; B23B *61/02*
U.S. Cl. 83—835 **9 Claims**



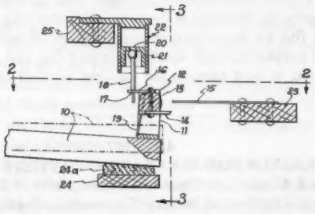
1. A vibration-damped disc-like rotatable article having two faces, a rotating axis and a central plane, comprising a body having a work region adapted to interact with another article; at least one thin damping layer consisting of visco-elastic material secured between a portion of the body which is securely attached to the work region and at least one relative thin, disc-like annular counter-element which extends substantially parallel thereto; and at least one disc-like annular outer member securely connected to the body; the damping layer being arranged between the two faces of said disc-like article and being covered by said at least one outer member, whereby the assembly permits shear stresses to occur in the damping layer.

4,285,261

PIANOHARP ACTION

Ellis Barron, 7228 Eads Ave., La Jolla, Calif. 92037

Filed Feb. 28, 1980, Ser. No. 125,676
Int. Cl.³ G10D *3/16*
U.S. Cl. 84—258 **5 Claims**



1. In a keyboard type musical instrument having a frame and a plurality of vibratable elements, a plucking means for each element thereof comprising:

(a) a pick body;

(b) a key-lever means rotatably carrying said pick body and

providing translational motion thereof relative to said vibratable element, said translational motion having a pluck direction and a return direction;

(c) a plectrum fixed to said pick body for plucking said vibratable element, said plectrum mounted eccentric to the center of rotation of said pick body for the purpose of providing plectrum escape motion, said escape motion being at right angles to said translational motion;

(d) a crank arm also fixed to said pick body;

(e) a resilient means opposing the rotation of said pick body and determining the rest position thereof;

(f) a pneumatic piston having an aperture, said piston sliding in a co-acting closed cylinder, said cylinder supported in a fixed position on said frame adjacent to said pick body; and

(g) a connecting rod connecting said crank arm to said piston, an end portion of said connecting rod engaging said piston and closing said aperture upon translational motion in the pluck direction and opening said aperture in the return direction, for the purpose of providing the plucking and escape motions.

4,285,262

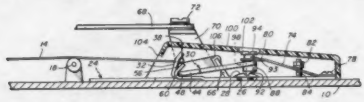
TREMOLO DEVICE

D. Thomas Scholz, 13 Rich Valley Rd., Wayland, Mass. 01778

Continuation-in-part of Ser. No. 931,610, Aug. 7, 1978, abandoned. This application Apr. 25, 1979, Ser. No. 33,155

Int. Cl.³ G10D *3/12*

U.S. Cl. 84—313 **21 Claims**



1. A tailpiece unit for a stringed instrument having a body and a bridge; the tailpiece unit comprising:

a tremolo bar mounted to the body at a location behind the bridge, the tremolo bar including means to enable the tails of the strings to be attached thereto;

said tremolo bar being mounted for movement from a predetermined normal position in a string-tensioning and string-relaxing direction to enable the strings to be tensioned or relaxed;

restraining means normally in engagement with the tremolo bar for resisting the force applied to the tremolo bar by the tension of the strings thereby to hold the tremolo bar in said predetermined normal position;

said restraining means being resilient to enable the restraining means to yield in response to movement of the tremolo bar in a string-relaxing direction beyond said predetermined normal position in response to an externally applied force on the tremolo bar, said restraining means being further constructed and arranged to bias and return the tremolo bar to said predetermined normal position upon release of said external force;

said tremolo bar and restraining means being constructed to enable the tremolo bar to be moved in either direction with respect to said predetermined normal position;

stop means engageable with the restraining means to limit the extent to which the restraining means may move in a string-tensioning direction to define a normal position for the restraining means; and

means for varying the position of the stop means thereby to vary the normal position of the restraining means, thereby to vary the predetermined normal position of the tremolo bar.

19. A tailpiece unit for stringed instrument having a body and bridge, the tailpiece unit comprising:

an anchor member mounted to the body at a location behind the bridge and having means to secure the tails of the strings thereto;

said anchor member being movable in a string-tensioning and string-relaxing direction;

bias means engageable with the anchor member for biasing the anchor member in a string-tensioning direction;

stop means engageable with the bias means to limit the extent to which the bias means can urge the anchor member in a string-tensioning direction; and

means for adjusting the position of the stop means.

4,285,263

WIND-INSTRUMENT FINGERING GUIDE

Henry Larsen, 192 N. Main St., West Hartford, Conn. 06107

Filed Mar. 8, 1979, Ser. No. 18,726

Int. Cl.² G09B *15/06*

U.S. Cl. 84—382 **11 Claims**

1. In the combination of:

a clarinet having three first rest-position tone holes for the first three fingers of one hand, at least one first fourth-finger key for the fourth finger of the one hand, three second rest-position tone holes for the first three fingers of the other hand, and at least one second fourth-finger key for the fourth finger of the other hand, said three first rest-position tone holes being longitudinally spaced along said clarinet from each other and from said three second rest-position tone holes, which are also longitudinally spaced along said clarinet from each other, the axes of said first rest-position tone holes and said second rest-position tone holes lying in a reference plane, with:

a finger guide including an elongate boy member having a first portion of said body member at least as long as the longitudinal extension of said first rest-position tone holes, said body member also having a second portion at least as long as the longitudinal extension of the second rest-position tone holes, said second portion being longitudinally positioned relative to said first portion for simultaneous positioning of said first portion at the longitudinal location of said first rest-position tone holes and said second portion at the longitudinal location of said second rest-position tone holes, said finger guide further including mounting means mounted on said clarinet and stably supporting said body member thereon with said first and second portions positioned at the longitudinal locations of said first and second rest-position tone holes, respectively, and spaced from said clarinet to permit operation of said clarinet by fingers positioned between said clarinet and said body member, the improvement wherein:

a. said mounting means supports said body member with said first portion spaced to the side of said reference plane where the one hand is to be positioned and said second portion spaced to the other side of the reference plane, where the other hand is to be positioned;

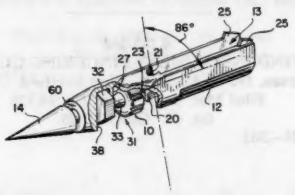
b. said first portion of said body member includes a first substantially rectilinear rod extending through the longitudinal positions of said first rest-position tone holes; and

c. said second portion of said body member includes a second substantially rectilinear rod extending through the longitudinal positions of said second rest-position tone holes and parallel to said first rectilinear rod and offset therefrom, there being an offset-rod portion extending between said rectilinear rods to hold them stably in position relative to each other.

4,285,264
GENERAL PURPOSE HOLLOW WALL TOGGLE FASTENER

Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., Stamford, Conn.

Filed May 15, 1979, Ser. No. 39,186
Int. Cl.³ F16B *21/00*
U.S. Cl. 411—345 **7 Claims**

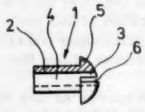


1. A hollow wall fastener comprising:
a threaded toggle bolt;
means for driving, pulling and rotating said bolt; and
an elongated toggle anchor having:
a longitudinal recess for receiving one end of said bolt in longitudinal alignment with the longitudinal axis of said anchor;
an end cap retention recess adjacent and in longitudinal alignment with said longitudinal recess, said recesses being separated by a wall portion of said toggle anchor having a transverse slot therein providing communication between said recesses;
an end cap having a non-circular retention portion, a frangible intermediate portion having a width less than the width of said slot, and an internally threaded head portion for threadably engaging said end of said bolt,
said retention portion and head portion being disposed in said retention and longitudinal recesses respectively, with said intermediate portion extending therebetween through said slot;
means permitting pivoting of said anchor with respect to said bolt about a pivot axis within said anchor, from said alignment position to another position in which the longitudinal axis of the anchor is substantially perpendicular to the longitudinal axis of said bolt; and
means comprising an approximately semicircular threaded groove in said anchor for locking said bolt and anchor together in snap-fit fashion mutually threadably engaged relationship in said other position.

4,285,265
TACKING RIVET

Hermann Rieper, Buxtehude, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 28, 1979, Ser. No. 53,057
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1978, 2831021
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—501 **6 Claims**

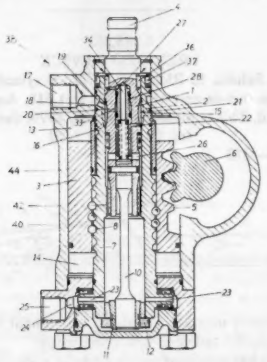


1. A tacking rivet body, comprising rivet shaft means, rivet head means secured to said rivet shaft means, a longitudinal bore extending axially entirely through said rivet shaft means and through said rivet head means, said rivet shaft means having a given outer diameter, said rivet head means having an outer diameter larger than said given outer shaft diameter, whereby the rivet head means form a rim extending radially outwardly of said outer shaft diameter, and dividing means extending at least to said outer shaft diameter and entirely through said rim to divide said rim into at least two separate portions, said dividing means preventing said separate rim portions from remaining stuck on a drill bit used in a boring operation to remove a rivet.

4,285,266
SERVO STEERING GEAR

Dieter Elser, Essingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 79,204
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1978, 2843592
Int. Cl.³ F15B *9/10, 13/042*
U.S. Cl. 91—375 A **9 Claims**



1. In a servo gear mechanism having a housing (40) provided with inflow and outflow ports (17, 25), a valve element (1) provided with passages conducting a pressure medium from the inflow port through a valve sleeve (2) to a servomotor (3, 13, 14) from which a return flow of the pressure medium to the outflow port is conducted, and a torsion bar (10) interconnecting the valve element and the valve sleeve, the improvement residing in said valve element having an axial bore (27) in fluid communication with said outflow port (25) and a return flow valve passage (21, 22) in the valve element, a valve piston (28) disposed in said axial bore, a spring (30) biasing the valve piston against flow of the pressure medium to a position permitting unrestricted return flow through said valve passage, said valve piston having pressure surface means (32) for exerting a piston actuating force thereon opposed by the spring, and pressure passage means (20, 33) in the valve element and the valve sleeve for conducting the pressure medium from the inlet port to the pressure surface means.

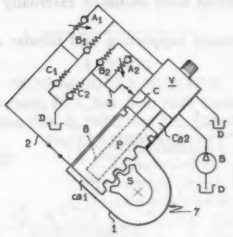
4,285,267
CONTROL DEVICE FOR HYDRAULIC SERVOMECHANISMS

Juan S. Bacardit, Barcelona, Spain, assignor to Bendiberica, S.A., Barcelona, Spain

Filed Nov. 1, 1979, Ser. No. 90,204
Claims priority, application Spain, Nov. 2, 1978, 474.738
Int. Cl.³ F15B *13/04*
U.S. Cl. 91—434 **1 Claim**

1. In a control device for hydraulic servomechanisms, of the type comprising two opposed working chambers which are separated from each other in a fluid-tight manner by a movable

member which is connected to the device to be operated, the two chambers being selectively and alternately connectable to a source of fluid under pressure or fluid discharge by means of a pair or conduits and a switching valve which can be operated by a control member, the fluid discharge and the source of fluid pressure being in communication with a reservoir, the displacement of the switching valve being opposed by a pressure which is proportional to the pressure of the fluid which has been led into the chamber which is actuated as a result of said displacement, the improvement wherein each of said pair of conduits which communicates each one of the pressure outlets of the switching valve with a corresponding working chamber of the operating device includes a pair of one-way valves connected in parallel with said conduit, said operating



device receiving fluid pressure during operation of the control member only through said pair of one-way valves, one of said pair of one-way valves solely providing for fluid communication from said switching valve to said operating device, said one one-way valve being adjustable to open communication only above a predetermined pressure level, said other one-way valve providing for fluid communication from said operating device to said switching valve, and said pair of conduits further communicating via a second conduit with said reservoir independently of said pair of one-way valves, said second conduit including separate branches for each conduit and said separate branches including one-way valves permitting fluid communication only from said reservoir to said operating device independently of said pair of one-way valves.

4,285,268

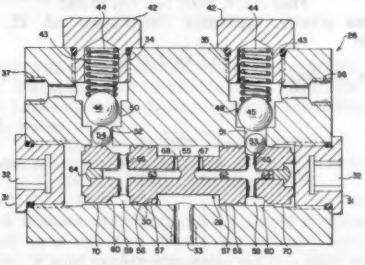
AUTOMATIC SEQUENCING VALVE AND SYSTEM

Harry C. Deckler, South Bend, Ind., assignor to White Farm Equipment Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 651,443, Jan. 22, 1976, Pat. No. 4,067,394. This application Dec. 19, 1977, Ser. No. 861,705

Int. Cl.³ F15B *11/00*

U.S. Cl. 91—517 **5 Claims**



1. An automatic hydraulically actuated sequencing spool valve comprising: a valve body having, a valve spool-receiving bore therein closed at opposite ends, a first port therein for alternately receiving hydraulic fluid under actuating pressure to actuate one of a pair of hydraulic actuators controlled by said valve and discharging hydraulic fluid from the other hydraulic actuator of said pair, a second port therein for providing hydraulic fluid communication between one of the said hydraulic actuators and said bore adjacent one end thereof, and a third port therein for providing hydraulic fluid communication between the other of said hydraulic actuators and said bore adjacent the opposite end thereof; and, a valve spool axially shiftable in said bore between either and only a first position wherein said spool engages a first end of said bore and is spaced from the second end and a second position wherein said spool engages said second end of said bore and is spaced from said first end, and having lands adjacent opposite ends and at least one land adjacent the middle with a circumferential groove separating each of said end lands from a said land at or adjacent the middle, and each of said circumferential grooves being in communication with the adjacent one of said second and third ports; first restricted passageways in said valve spool or said valve body communicating between said first port and each of said circumferential grooves, and second restricted passageways in each end of said valve spool or said bore adjacent said opposite ends thereof and providing restricted fluid flow communication between each of said circumferential grooves and the adjacent closed end of said bore, said first restricted passageways producing a differential in pressure acting through said second restricted passageways on opposite ends of said valve spool each time hydraulic fluid under actuating pressure is delivered to said first port to actuate one of said actuators while the other actuator is extended and stationary so as to shift said valve spool from whichever position it is in to its alternative position; check valve means for each of said second and third ports; and valve actuating means for each of said check valve means adapted to be alternately actuated to the open position by said valve spool on the axial shifting thereof.

4,285,269

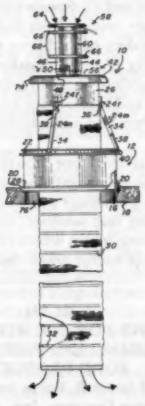
PORTABLE VENTILATING APPARATUS FOR PURGING UNDERGROUND INSTALLATIONS AND THE LIKE

Bradley A. Pelsue, Lakewood, and Allan E. Beavers, Littleton, both of Colo., assignors to T. A. Pelsue Company, Englewood, Colo.

Filed Mar. 13, 1978, Ser. No. 886,048

Int. Cl.³ F24F *13/00*

U.S. Cl. 98—33 R **2 Claims**



1. For use in combination with a rimmed vertical entryway into a space to be ventilated, the assembly which comprises: an endless collar having upper and lower open ends and a wall shaped to fit within the entryway and leave an annular gap therebetween for the passage of exhaust air, gap-bridging

means depending from the collar operative to support the latter within the rimmed entryway without appreciably obstructing the flow therebetween, a tapered nozzle centered within the collar so as to leave a space therebetween, a forced air blower connected to the nozzle operative to direct a stream of air downwardly therethrough, a duct hanging from the underside of the collar forming an elongate continuation thereof, and an upwardly and outwardly flared deflector bordering the upper open end of the collar, said nozzle and collar cooperating with one another and with the blower when the latter is operative to aspirate air into the duct over the top of the deflector, and said deflector being effective to turn the air exhausted through the annular gap aside so no significant quantity thereof will be reaspirated into the duct.

4,285,270

PAINT SPRAY BOOTH WITH FLOODED FLOOR

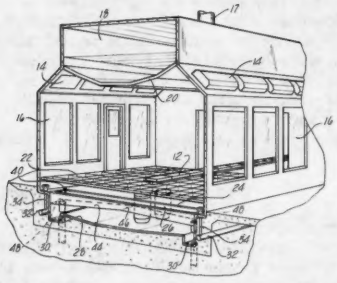
Joseph D. Donahue, Troy, Mich., assignor to Schweitzer Industrial Corporation, Madison Heights, Mich.

Filed Oct. 29, 1979, Ser. No. 89,075

The portion of the term of this patent subsequent to Sep. 16, 1997, has been disclaimed.

Int. Cl.³ B05C *15/00*

U.S. Cl. 98—115 SB **8 Claims**



1. In a paint spray booth of the type comprising an elongate housing defining a working area, a perforate working floor, means for supplying air to the working area from overhead and for causing a flow of said air downwardly through the working floor, a flat subfloor spaced from and beneath the working floor, means for flooding said subfloor with water to a substantial depth, a plurality of longitudinally spaced discrete outlet structures in said subfloor through which air and water flow, and means beneath said subfloor for receiving and discharging paint-laden water from said outlet structures, the improvement comprising:

means defining at least one trough in the subfloor, said trough extending substantially laterally across the subfloor and having openings in the bottom thereof for draining and cleaning said subfloor, said openings being provided with closing means which close off said openings to prevent drainage except when desired.

4,285,271

SEAL PLATE DRIVE FOR USE WITH APPARATUS FOR PRESSURE FEEDING AND PRESSURE COOKING A FOOD PRODUCT

Glenn H. Falck, and James R. Boose, both of Montgomery, Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Apr. 14, 1980, Ser. No. 140,125

Int. Cl.³ A47J *27/12*

U.S. Cl. 99—348 **20 Claims**

1. Apparatus for continuously pressure cooking, extruding and forming pellets of a food product, which apparatus includes a pressure feeder assembly, a seal plate assembly, a pressure cooker assembly, an extruder assembly and a cut-off assembly and, in which, said seal plate assembly comprises:

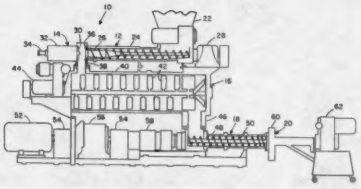
(a) a seal plate for compacting and regulating the flow of product mix in a terminal portion of said pressure feeder assembly so as to form a pressure seal for the pressure cooker assembly,

(b) said seal plate carrying means thereon for abrading the compacted product mix for quick, uniform heating in said pressure cooker assembly,

(c) said seal plate being mounted on one end of a rotatable and axially translatable seal plate shaft that enters into a feeder housing providing communication for said product mix from said terminal portion of said pressure feeder assembly to the inlet of said pressure cooker assembly,

(d) said seal plate shaft being telescopically received within a tubular drive shaft mounted externally of said feeder housing,

(e) bearing means supporting said tubular drive shaft for rotation,



(f) coupling means interconnecting said tubular drive shaft to said seal plate shaft so that both shafts will co-rotate while permitting axial translation of said seal plate shaft with respect to said tubular drive shaft,

(g) first drive means operatively connected to said tubular drive shaft to impart rotary motion thereto,

(h) second drive means operatively connected to said seal plate shaft to impart translatory motion thereto,

(i) first seal means disposed between said seal plate shaft and said tubular drive shaft at a location adjacent said feeder housing to prevent ingress of product mix and superatmospheric steam between said shafts, and

(j) second seal means cooperatively associated with said feeder housing and said tubular drive shaft to prevent egress of product mix and superatmospheric steam from said feeder housing and along the outer periphery of said tubular drive shaft.

4,285,272

TOASTER

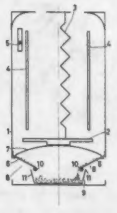
Tiede Klijnstra, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,842

Claims priority, application Netherlands, Jul. 12, 1978, 7807486

Int. Cl.³ A47J *37/08*

U.S. Cl. 99—391 **3 Claims**



1. A toaster for slices of bread or the like, which comprises

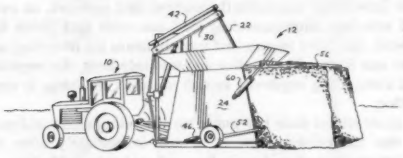
a housing; at least one heating element in said housing for respectively toasting one or more bread slices; an opening in the bottom of the housing adjacent each heating element for the passage of air over said heating element to cool the same following a toasting cycle; a flap associated with each opening and movable between an open position and a closed position for closing the opening during the toasting cycle; means engaging the flaps for effecting movement of the same between their open position and their closed position; a support for said one or more bread slices movable between a rest position and a toasting position, said slice support when moved to said toasting position contacting said flap-engaging means to effect closing of the flaps; and means to move said slice support to and to maintain the same in said toasting position during the toasting cycle.

4,285,273

MINI MODULE BUILDER

Donald W. Dejarnett, P.O. Box 569, Hale Center, Tex. 79041

Filed Feb. 6, 1980, Ser. No. 119,189
Int. Cl.³ B30B *1/32*
U.S. Cl. 100—35 **15 Claims**



1. The process of making a self supporting, self contained segmental module of seed cotton which is loaded as a self supported, self contained unit upon a module mover; wherein the improved method comprises:

a. compacting freshly harvested seed cotton into a first segment of the module with a module maker, transfering weight from a tractor to the module maker to aid compacting,

b. moving the module maker to a position which partially overlaps the first segment, then

c. compacting as before freshly harvested seed cotton into a second segment of the module with the module maker, the first and second segments adhered together so that the segments together form a single self supported, self contained unit, and later

d. loading said segmental module upon a module mover.

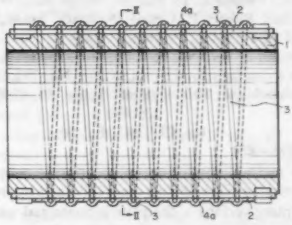
4,285,274

SEAMLESS CYLINDRICAL PRINTING SCREEN AND PROCESS FOR PREPARATION THEREOF

Kunio Katsuuma, Osaka, Japan, assignor to Toshin Kogyo Co., Ltd., Hyogo, Japan

Filed Oct. 22, 1979, Ser. No. 87,382
Claims priority, application Japan, Jul. 5, 1979, 54-84426
Int. Cl.³ B05C *17/06*; B41L *27/28*
U.S. Cl. 101—128.21 **8 Claims**

1. A seamless cylindrical printing screen composed of a meshed metal cylinder, wherein said cylinder comprises a plurality of axial mother lines composed of a metal wire and extended from one open edge of the cylinder to the other open edge substantially in the axial direction at small intervals between every two adjacent axial mother lines, a circumferential mother line composed of a metal wire and extended spirally from one open edge of the cylinder to the other open edge at small intervals between every two adjacent turns of the circumferential mother line to cross said axial mother lines and a metal plating layer covering the peripheries of said circumferential and axial mother lines and bonding them to one another at the crossing points thereof.

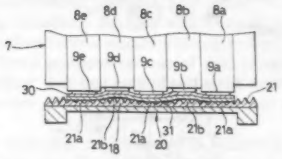


4,285,275

PRINTING PLATEN FOR HAND LABELER, OR THE LIKE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

Filed Jun. 25, 1979, Ser. No. 51,954
Claims priority, application Japan, Jun. 26, 1978, 53-86641[U]
Int. Cl.³ B41K *1/36*; B41F *1/38*
U.S. Cl. 101—407 BP **5 Claims**



1. A printing platen for use with a label printing machine, or the like, wherein said platen includes a surface thereof on which a strip of labels, or the like objects to be imprinted, is fed and wherein said platen surface is opposed to and is adapted to be moved against printing types supported by a printing head, or the like; said platen including a support frame; a plate shaped impression plate supported on said platen support frame; said impression plate having a surface thereof which is the said surface of said platen that is opposed to printing types; said impression plate having a plurality of projections projecting up from said impression plate surface; said impression plate projections being comprised of elastic and deformable material and being adapted to be depressed to varying extends upon being engaged by printing types and said projections are of such height and deformability that, when printing types are applied against the label strip and are pressed against said impression plate surface projections, the types of a printing head may elastically deform said projections to varying extents depending upon the extent of irregularities of the types, and the types may be imprinted upon labels with a uniform, averaged density, despite irregularities in the types or in the orientations of the types; said projections of said impression plate are in the form of a plurality of corrugations defined in said impression plate surface; said corrugations are oriented on said impression plate that each said corrugation extends parallel to the direction of advancing movement of the label strip over said impression plate; said corrugations are of such a width, are so sized and are so placed that at least two of said corrugations will be covered over in the width direction across said platen by each printing type when the type engages a label strip on said impression plate surface.

4,285,276
METHOD FOR PRINTING EMPLOYING LITHOGRAPHIC FOUNTAIN DAMPENING SOLUTION

Howard A. Fromson, 15 Rogues Ridge Rd., Weston, Conn. 06066, and Robert F. Gracia, Scituate, Mass., assignors to Howard A. Fromson, Weston, Conn.

Continuation of Ser. No. 960,894, Nov. 15, 1978, abandoned, which is a continuation-in-part of Ser. No. 792,424, Apr. 29, 1977, abandoned. This application Apr. 11, 1980, Ser. No. 139,490

Int. Cl.[3] B41M *1/06*

U.S. Cl. 101—451 5 Claims

1. In a method for lithographic printing wherein a lithographic printing plate having oleophilic and hydrophilic areas on the printing surface of the plate is contacted with ink and an aqueous fountain dampening solution during printing, the improvement comprising, as said fountain solution an aqueous solution containing a water-soluble hydrolase enzyme dissolved therein to improve printing quality and reduce the amount of fountain solution necessary to dampen the plate.

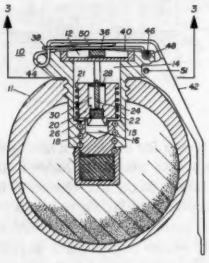
4,285,277
LOW PROFILE GRENADE FUZE

Russell E. Lerman, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 26, 1979, Ser. No. 33,670

Int. Cl.[3] F42B *11/42*

U.S. Cl. 102—487 9 Claims



1. A grenade comprising in combination:
a housing for explosive;
a tubular fuze body mounted on said housing, said body having an upper open end and a lower open end and containing a first bore and a second bore coaxially located therein;
a striker plate fixedly mounted in said first bore;
a spring biased primer holder positioned in said second bore and containing a primer charge and a firing pin, said firing pin being restrainably held therein spaced between said primer charge and said striker plate;
a biased safety lever for controlling activation of said grenade pivotably attached to said fuze body upper end;
a detent lever positioned below said safety lever and pivotably attached to said fuze body upper end, said detent lever being restrained by and pivoting diametrically opposite to said safety lever;
a spacer means to prevent movement of said spring biased primer holder toward said striker plate until said detent lever is released;
whereby release of said safety lever releases said detent lever permitting said spring biased primer holder to move said firing pin against said striker plate, initiating the primer.

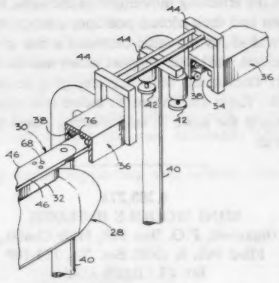
4,285,278
RAPID TRANSIT SYSTEM

Bruce Mitchell, Terreton, Id. 83450

Filed Jul. 21, 1980, Ser. No. 170,595

Int. Cl.[3] B61B *3/00*

U.S. Cl. 104—96 8 Claims



1. In a rapid transit system having a guide line network including a main line and one or more interconnected side guide lines, a car moveable throughout said network, an overhead tow bar interconnecting said car with said guide line network, car drive means, and switch means for diverting said car to and from said main line and said side lines, the improvement comprising improved switch means comprising, in combination:
a. an overhead main line guide bar extending along said main line immediately before, at and immediately after the intersection of said main line and said side guide line;
b. a main line guide finger manually moveable vertically from within said car into and out of sliding contact with the side of said main line overhead guide bar away from said side guide line;
c. an overhead side line guide bar extending along said side line immediately before, at and immediately after said intersection;
d. a pair of turn off guide fingers spaced laterally on each side of main line guide finger and manually movable vertically as a unit from between said car for sliding engagement with said side line guide bar to divert said car to said side line; and
e. lever means connected to said three fingers to simultaneously raise said side line guide fingers while lowering said main line guide finger and vice versa.

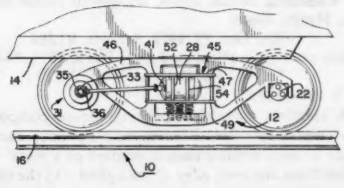
4,285,279
RAILWAY VEHICLE ENERGY PRODUCING SYSTEM

Arthur B. Chiappetti, 10600 S. Oakley, Chicago, Ill. 60643

Filed May 29, 1979, Ser. No. 42,739

Int. Cl.[3] B60L *1/00, 5/00;* B61C *17/00*

U.S. Cl. 105—118 8 Claims



1. In a vehicular energy producing system, said system including an electrical generating means and being adapted to be mounted on a heavy vehicle having at least one undercar-

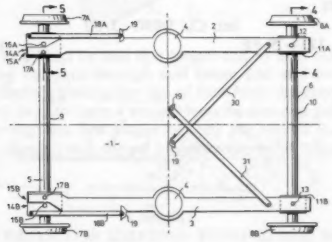
riage, the undercarriage having at least one axle journaled for rotation about its ends, a plurality of wheels being connected to the axle for helping support rollably the undercarriage, the combination comprising: bracket means mounted on the undercarriage for supporting said electrical generating means; transmission means for coupling drivingly the input of said generating means and the undercarriage for driving said generating means as the vehicle moves; conductor means for supplying said electrical power from said generating means for utilization purposes; clutch means responsive to the rotation of the wheels of the undercarriage for coupling mechanical power drivingly to said transmission means; said clutch means including a centrifugal clutch for slipping at lower speeds of the wheels and for engaging automatically at higher speeds of the wheels.

4,285,280

RADIAL RAILWAY TRUCK

Roy E. Smith, Kingston, Canada, assignor to Urban Transportation Development Corporation Ltd., Toronto, Canada

Filed Jul. 14, 1978, Ser. No. 924,610
Claims priority, application Canada, Jul. 12, 1978, 307216
Int. Cl.³ B61F *3/08, 5/26, 5/44, 5/50*
U.S. Cl. 105—168 **7 Claims**



1. A self steering truck for use in association with a railway vehicle, comprising a first axle, a second axle and frame members extending between said axles; said first and said second axle each having a pair of flanged wheels fixed thereto, each of said axles mounted in a plurality of bearing means for rotation about a generally horizontal axis, each of at least two of said bearing means being attached to said frame members by means of a steering leve.; each of said steering levers being attached to said frame members and to said bearing means for pivotal movement about generally vertical axial pivots which axial pivots are horizontally spaced from each other; a steering rod being attached to each of said steering levers and adapted to be attached to the railway vehicle, the other of said bearing means being attached to said frame members for pivotal movement about respective generally vertical axial pivots.

4,285,281

TABLE AND A TABLE SUPPORT

Berndt E. Frick, Herrgardsvägen 9, 135 00 Tyresö, Sweden

Filed May 21, 1979, Ser. No. 40,721
Claims priority, application Sweden, May 19, 1978, 7805747
Int. Cl.³ A47B *9/00*
U.S. Cl. 108—147 **5 Claims**

1. A table having a table top which is selectively ascendable and decendable and having a table support, said table support comprising:

a first member, said first member being attached to the under side of said table top, and said first member including:

a plurality of shaft members, each of said shaft members having a tenon projecting outwardly from said first member;

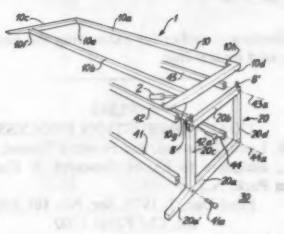
a plurality of sprockets, each of said sprockets being mounted on one of said shaft members, and at least one of said shaft members having a plurality of sprockets mounted thereon;

a plurality of chain members, each of said chain members mechanically coupling one of said sprockets mounted on one of said shaft members to another of said sprockets mounted on another of said shaft members, such that each of said chain members mechanically couples only two of said sprockets; and

actuating means for selectively rotating one of said plurality of shaft members,

wherein when said one of said plurality of shaft members is selectively rotated, said plurality of sprockets and said plurality of chain members cooperate such that the tenons included on said plurality of shaft members rotate in synchronism in the same direction; and

a side member, said side member including:



a plurality of screw members, each of said screw members being threadedly engaged with said side member, and each of said screw members having means for receiving the tenon included on one of said plurality of shaft members, such that each of said screw members rotates in unison with the tenon received by said screw member;

whereby when said actuating means selectively rotates the one of said plurality of shaft members in a first direction, said plurality of screw members rotate in synchronism in said first direction, thereby causing said table top to ascend, and

further whereby when said actuating means selectively rotates the one of said plurality of shaft members in a second direction, said plurality of screw members rotate in synchronism in said second direction, thereby causing said table top to decend.

4,285,282

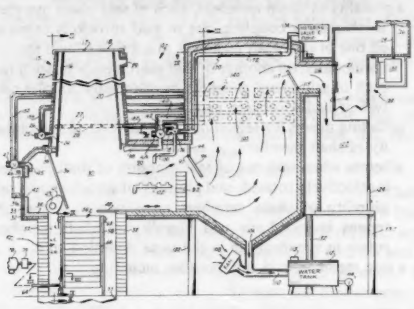
RUBBISH AND REFUSE INCINERATOR

Lewis D. Good, Caledonia, Mich., assignor to Russell E. Stadt, Grand Rapids, Mich., a part interest

Division of Ser. No. 863,255, Dec. 22, 1977, Pat. No. 4,205,614. This application Sep. 14, 1979, Ser. No. 75,703
Int. Cl.³ F23G *3/00, 7/00*
U.S. Cl. 110—259 **27 Claims**

1. An incinerator for burning rubbish and refuse as fuel comprising a primary and a secondary combustion chamber; a fuel receiving hopper positioned above and communicating with said primary combustion chamber; an ash collecting area positioned below said primary combustion chamber in alignment with said hopper and including a grate for receiving ashes; a gas circulating and flyash collecting chamber located adjacent and communicating with said secondary combustion chamber; a primary air intake for inserting air in said primary combustion chamber; hopper heating means for heating said hopper to begin combustion of the fuel material in said hopper; air heating means for heating air within said incinerator and inserting means for inserting said heated air in at least one of said primary and secondary combustion areas; baffle means for

controlling the flow of gases through said incinerator; and an exhaust stack communicating with said gas circulating and



flyash collecting chamber for exhausting the gases of combustion from said incinerator.

4,285,283

COAL COMBUSTION PROCESS

Richard K. Lyon, Fanwood, and Howard Freund, Warren, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 7, 1979, Ser. No. 101,210

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **6 Claims**

1. A coal combustion process wherein the emission of SO_x is minimized which process comprises:

(a) providing a coal containing an organic calcium to sulfur ratio of at least 2 to 1 for coal containing less than 1 wt.% sulfur and at least 1 to 1 for coal containing greater than 1 wt.% sulfur;

(b) burning the coal at temperatures greater than about 1200° C. in a first combustion zone in the presence of an oxidizing agent but under reducing conditions such that the equivalence ratio of coal to oxidizing agent is at least 1.5;

(c) separating the resulting solid effluent from the gaseous effluent from the first combustion zone; and

(d) burning the gaseous effluent at a temperature from about 1000° C. to about 1500° C. in a second combustion zone under oxidizing conditions.

4,285,284

SEEDER WITH PIVOTING SOIL BREAKERS

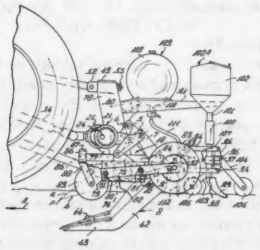
Cornelis van der Lely, Brüschenrain 7, Zug, Switzerland

Filed Sep. 14, 1977, Ser. No. 833,286

Claims priority, application Netherlands, Sep. 17, 1976, 7610345

Int. Cl.³ A01C *5/06*; A01B *11/00*

U.S. Cl. 111—85 **22 Claims**



1. A soil cultivating implement comprising a frame and a plurality of soil working members being pivotably connected to said frame by corresponding polygonal linkages, driving means connected to rock said linkages and pivot said members up and down about substantially horizontal axes during operation, said members comprising fastening portions and forwardly extending soil working portions that are vertically displaced during operation to loosen soil, the amplitude of repetitive vertical displacement of points along the lengths of said soil working portions being greater rearwardly from their leading ends, at least one polygonal linkage having vertically spaced apart pivotal axes that extend substantially horizontally transverse to the direction of travel and said pivotal axes being located at different levels and behind one another, said linkage having two forward pivots interconnected to the frame and two trailing pivots interconnected to the fastening portion of said member, the distance between the two forward pivots being less than the distance between the two trailing pivots when viewed from the side.

4,285,285

FEED DEVICE AND METHOD FOR FEEDING YARN OR OTHER TEXTILE MATERIAL

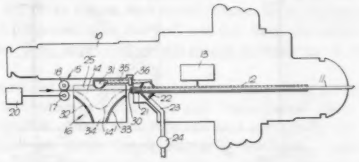
George Chambers, and Kenneth F. Hall, both of Martock, England, assignors to Newroyd Limited, Lancashire, England

Filed Oct. 31, 1979, Ser. No. 89,726

Claims priority, application United Kingdom, Nov. 10, 1978, 44044/78

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 FF **12 Claims**



1. A tufting machine comprising a hollow member through the interior of which textile material may be passed; a housing having a passage through which the textile material may pass on its way to the said interior; cooperating rollers between the nip of which the textile material may be passed, for feeding the textile material to the passage, the cooperating rollers, the passage and the hollow member being aligned to ensure that the textile material passes therebetween in a substantially straight line path; reciprocating means for reciprocating the hollow member towards and away from the cooperating rollers; fluid jet means for directing at least one fluid jet onto the textile material passing through the passage so as to tension the said textile material; and pressure supply means which are arranged to supply a pressure fluid to the said interior to entrain the textile material therethrough during a predetermined portion only of the reciprocation of the hollow member, the pressure supply means also supplying the fluid jet means with an intermittently varying fluid pressure which is respectively reduced and increased, so as to reduce and increase the said tension, in accordance with whether or not the textile material is being entrained through the said interior.

4,285,286

TUFTED PILE FABRIC AND METHOD AND APPARATUS FOR MAKING SAME

Juel T. Hash, Ft. Oglethorpe, Ga., assignor to Shirley M. Jorges, Ft. Oglethorpe, Ga., a part interest

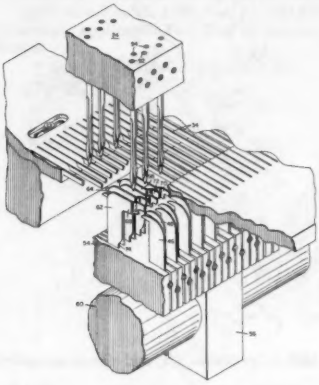
Filed Feb. 22, 1980, Ser. No. 123,913

Int. Cl.³ D05C *15/00*

U.S. Cl. 112—79 R **20 Claims**

1. A method of tufting pile fabric comprising, supporting and feeding a base fabric in one direction, penetrating a yarn through the base fabric to form a first loop on one side of said fabric, supporting on said one side a first looper having a free

end pointing in said one direction, relatively moving said looper so its free end enters and seizes said loop and thereafter sheds said loop, supporting upon said one side a second looper having a free end closer to said fabric than the free end of said first looper and pointing in the direction oppositely to said one direction, relatively moving said second looper to enter and



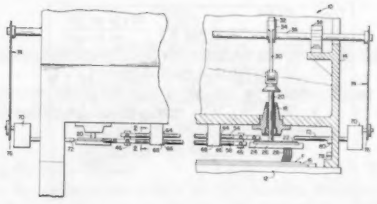
seize the loop shed by said first looper and to hold said loop, penetrating the yarn through said fabric and said loop at a location displaced along the line of feed from the penetration of the first loop to form a second loop on said one side, relatively moving said first looper to seize the second loop, snd relatively moving said second looper to thereafter release said first loop.

4,285,287

APPARATUS FOR SHIFTING TUFTING MACHINE NEEDLE BAR

Billy E. Inman, Signal Mtn., Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Sep. 11, 1980, Ser. No. 186,115
Int. Cl.³ D05C *15/30*
U.S. Cl. 112—79 R **6 Claims**



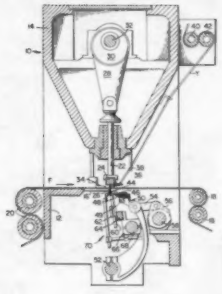
1. In a tufting machine having a reciprocating needle bar carrying a plurality of needles spaced transversely across the machine and adapted to penetrate a base material moving longitudinally across a support plate thereof to insert a plurality of stitches upon each penetration of the base material, and mounting means for mounting said needle bar for transverse movement relatively to the base material, the improvement comprising, first and second control members vertically spaced one from the other, journal means for mounting both said control members for transverse movement relatively to said base material, a guide member including a guideway, means for pivotably mounting said guide member to each of said control members, a follower disposed within said guideway, means connecting said follower to said needle bar, whereby the path of movement of the needle bar is determined by the disposition of the guideway, and positioning means for selectively providing a controlled transverse step shift while the needles are above the support plate to the upper of said control members and then to the lower control member thereby to shift the needle bar transversely.

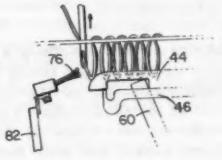
4,285,288

TUFTING APPARATUS FOR PREVENTING SEW-THRU AND TAGGING

Billy E. Inman, Signal Mountain, Tenn., and Wheeler E. Phillips, Kensington, Ga., assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Sep. 19, 1980, Ser. No. 188,718
Int. Cl.³ D05C *15/16*
U.S. Cl. 112—79 R **9 Claims**





1. In a tufting machine, means for feeding a base fabric in one direction, at least one yarn carrying needle supported on one side of the base fabric, means for reciprocating said needle for penetrating said fabric to present loops of yarn therein, looper means disposed on the other side of said fabric, and means for oscillating said looper means in timed relationship with said needle toward and away from cooperation with said needle for seizing successive loops of yarn presented thereby and for shedding at least some of said loops, the improvement comprising, a wiper disposed on said other side of said fabric and facing in said one direction, means for oscillating said wiper in timed relationship with said needle in a path transverse to the path of said needle for sweeping loops shed by said looper into said one direction away from the path of the needle and for precluding said shed loops from entering the path of said needle as the needle penetrates said fabric, said wiper comprising means readily deflectible when engaged by said needle.

7. In the method of tufting pile fabric including the steps of supporting and feeding a base fabric in one direction, actuating a needle in a reciprocating path to stitch a yarn continuously through said base fabric as the fabric moves to form a row of successive yarn loops on one side of said fabric, and supporting upon said one side of said fabric an oscillating looper having a free end for entering and seizing loops in succession and for shedding at least some of said loops, the improvement comprising supporting upon said one side of said fabric a wiper pointing in said one direction and oscillating said wiper across said path of said needle to sweep each shed loop in succession in

said one direction and to maintain said shed loop out of said path of said needle.

4,285,289

EMBROIDERING MACHINE

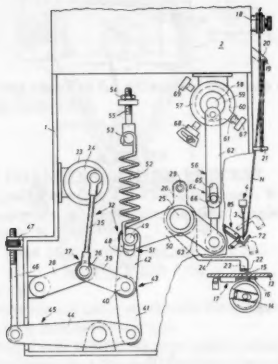
Kurt Bolldorf, Kaiserslautern, and Gottfried Schmidt, Kleinmaischeid, both of Fed. Rep. of Germany, assignors to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 11, 1980, Ser. No. 186,122

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2938894

Int. Cl.³ D05C *3/02;* **D05B** *55/16, 29/02*

U.S. Cl. 112—98 **16 Claims**



1. An embroidering machine comprising: a group of needles each for carrying separate thread; needle drive means for engaging one needle at a time and moving said one needle from a rest position into an operating position; a presser foot movable cyclically with movement of said one needle in its operating position, between a lower dead center position and an uper dead center position, and having an opening for the passage of said one needle; presser foot drive means connected to said presser foot for moving said presser foot between its upper and lower dead center positions and for moving said presser foot upwardly beyond it upper dead center position; a cutting means for cutting the thread of said one needle to form an end portion of the thread; and holding means for securing the end portion of the thread after the thread is cut.

4,285,290

MODULAR WORK TRIMMER FOR A SEWING MACHINE

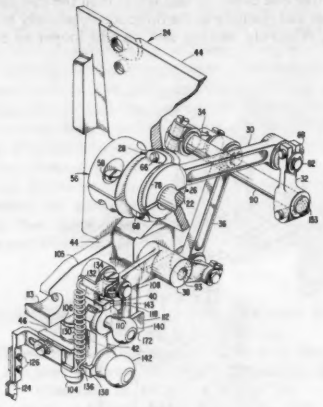
Kenneth F. Kaltenbach, Leonia, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 30, 1979, Ser. No. 71,156

Int. Cl.³ D05B *37/00*

U.S. Cl. 112—125 **9 Claims**

1. A work trimmer module for a sewing machine having a driving arm shaft within a hollow bracket arm which extends above the bed of the machine and includes an opening at the rear of the machine permitting access to the arm shaft, said module comprising a frame securable to the machine and including an opening which communicates with the opening in the arm when the frame is secured thereon, a split eccentric securable on the arm shaft, a split bearing securable about the eccentric, a member reciprocable by said bearing during rotation of the arm shaft and operable through the said openings, linkage means mounted on the frame outside said bracket arm and removably connected with said reciprocable link, a trimmer knife carrier operably connected with said linkage means for movement thereby at least at times in response to the reciprocation of said reciprocable link, and a knife actuable by said carrier.



4,285,291

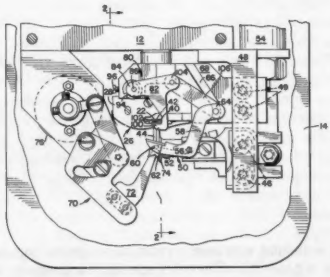
NEEDLE GUARD FOR SEWING MACHINES

Manfred Ackermann, Elmhurst, and Nicholas Alfano, Melrose Park, both of Ill., assignors to Union Special Corporation, Chicago, Ill.

Continuation of Ser. No. 914,693, Jun. 12, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 68,040

Int. Cl.³ D05B *55/06, 57/14, 65/02*

U.S. Cl. 112—184 **11 Claims**



11. A sewing machine having in combination a thread carrying needle adapted for movement in an endwise reciprocatory path during a sewing cycle, a lower stitch forming mechanism arranged to manipulate a lower thread and to cooperate with said needle in the formation of stitches, and a needle guard means comprising:

means operative for engaging and positioning said needle relative to said lower stitch forming mechanism, said means operative being adapted to remain in a generally stationary position relative to the needle's path during the sewing cycle but then initially and automatically move from its stationary position at the completion of the sewing cycle.

4,285,292

METHOD OF THREAD STITCHING LAYERS TO FORM A SEWN BOOK

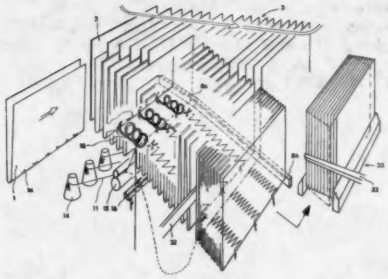
Horst Rathert, Minden, and Winfried Hedrich, Rahden, both of Fed. Rep. of Germany, assignors to Rahdener Maschinenfabrik August Kolbus, Wesphalia, Fed. Rep. of Germany

Division of Ser. No. 8,697, Feb. 1, 1979, Pat. No. 4,252,071. This application Jan. 21, 1980, Ser. No. 114,074

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806062

Int. Cl.[3] D05B *97/00*; B42B *1/02*

U.S. Cl. 112—262.1 9 Claims



1. A method for thread stitching several layers to form a sewn book or the like, the layers comprising signature sheets folded to form a back, the method comprising:

conveying the layers in spaced apart parallel relation, the backs of said layers being aligned in a plane, said layers being moved in relation to at least one spiral needle;

rotating said spiral needle to provide for penetration and exiting of the backs of the layers by the spiral needle, said spiral needle being rotated at a speed and having a helix angle which is coordinated with the spacing and the speed of advancement of the layers, the spiral needle stitching the plurality of layers with thread to provide a plurality of sewn layers; and

drawing the thread through the sewn layers at several points between the layers to reduce the tension of said thread.

4,285,293

COMBINED NEEDLE GUARD/NEEDLE COOLER FOR SEWING MACHINE

Wayne F. Martling, Oak Park, Ill., assignor to Union Special Corporation, Chicago, Ill.

Filed Oct. 26, 1979, Ser. No. 88,746

Int. Cl.[3] D05B *71/04*, *83/00*

U.S. Cl. 112—281 7 Claims

1. In combination with a sewing machine having a frame, work support means, a thread carrying needle adapted for endwise reciprocation during a sewing cycle, a lower stitch forming mechanism arranged to manipulate a lower thread and to cooperate with said needle in the formation of a stitch, an operable means for cooling and guarding the needle comprising:

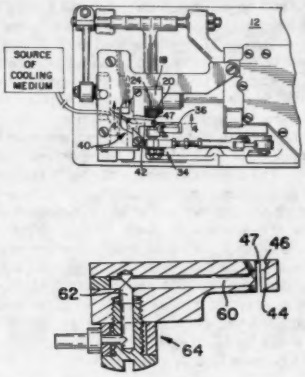
member means extending beneath the work support means to a position in the reciprocatory path of said needle, said member means having a bore the diameter of which constitutes a camming surface which is adapted, in the event that on its downstroke the needle is deflected or bent in any direction away from its normal path, to reposition the needle properly with respect to the lower stitch forming means;

and

means defining a passageway formed in said member means and opening into said bore for transmitting a cooling medium to the area in which said needle passes through said member whereby cooling same.

6. In a sewing machine having a frame, work support means, reciprocatory thread carrying needle means, complementary means cooperating with said needle means for producing a stitch in a workpiece and means operative for simultaneously guarding and cooling said needle comprising:

member means disposed beneath said work support means in



the reciprocatory path of said needle means and having an opening the diameter of which is effective to engage and reposition the needle in the event that it is bent or flexed so as to insure cooperation of said needle with said complementary means; and

said member means being provided with channels that are in communication with said opening and adapted to transmit a cooling medium to that portion of the needle encompassed by said opening.

4,285,294

UPPER LAYER FEED MECHANISM IN A SEWING MACHINE

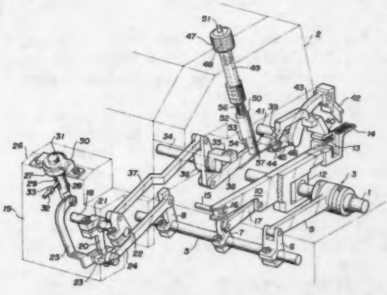
Kikuo Aida, Tsukuimachi, Japan, assignor to Tokyo Juki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1980, Ser. No. 163,625

Claims priority, application Japan, Jul. 4, 1979, 54-92329[U]

Int. Cl.[3] D05B *27/06*

U.S. Cl. 112—311 2 Claims



1. In a sewing machine comprising a machine frame, a drive shaft rotatably supported on said machine frame, a horizontal feed adjuster and an eccentric cam mounted on said drive shaft in spaced relationship to each other along the length of the

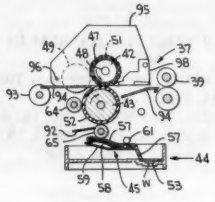
shaft, the eccentricity of said adjuster and eccentric cam with respect to the drive shaft being adjustable, a horizontal feed shaft rockably supported on said machine frame and interlocked to said adjuster and main- and sub-feed dogs disposed on the opposite sides of the cloth feed path in said sewing machine below a cloth being sewn and interlocked to said horizontal feed shaft and eccentric cam for cloth feed movement, characterized by an upper layer feed mechanism comprising a first interlocking arm secured at one end to said horizontal feed shaft, an upper layer feed shaft rotatably supported at one end on said machine frame and having a second interlocking arm secured to the other end, a connector rod connecting between said first and second interlocking arms, an adjusting means adjusting the connection between said second interlocking arm and connector rod with respect to the axis of said horizontal feed shaft and having an adjusting member disposed out of said machine frame, a support arm rotatably supported at one end on said machine frame, an upper feed arm rotatably supported at one end on said support arm and having an upper layer feed dog at the other end above and facing said main feed dog, a connector means connecting between said upper feed shaft and support arm so as to transmit the rocking movement of the upper feed shaft to the support arm to thereby cause said upper layer feed dog to move in the same horizontal plane as said main feed dog, a resilient means normally urging downwardly said upper layer feed dog at said upper layer feed arm and a means rockable in response to the rotation of said drive shaft to cause said upper layer feed dog to raise said upper feed arm against the resiliency of said resilient means when main feed dog descends.

4,285,295

FIXING DEVICE FOR ELECTROPHOTOGRAPHIC COPYING MACHINES

Soichi Iwao; Shinji Takiguchi, and Toshio Sakata, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 18, 1979, Ser. No. 76,738
Claims priority, application Japan, Sep. 19, 1978, 53-115378
Int. Cl.³ B05C *11/00*
U.S. Cl. 118—60 **3 Claims**



1. A fixing apparatus for use with an electrophotographic copying machine, said fixing apparatus being capable of fixing an unfixed toner image on a copy paper passing therethrough, said fixing apparatus including

a pair of rotatable fixing rollers which are mounted so as to be capable of being positioned in nip-defining contact, a copy paper having an unfixed toner image on one side being capable of passing therebetween, and

an applicator means for intermittently applying a predetermined quantity of offset-preventing liquid to one of said fixing rollers, said applicator means including

an applicator roller in contact with the surface of said one fixing roller,

a supply tank containing offset-preventing liquid,

a movable feeding device capable of intermittently supplying offset-preventing liquid from said supply tank to said applicator roller, and

drive means for moving said feeding device,

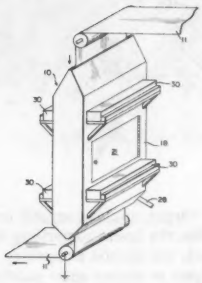
said applicator means supplying offset-preventing liquid to said one of said fixing rollers such that upon rotation of said fixing rollers a large amount of offset-preventing liquid will be located on the roller intended to contact the side of the copy paper having the unfixed toner image at the portion thereof where the leading edge of the copy paper will be positioned so as to facilitate separation therebetween, whereas a lesser amount of offset-preventing liquid will be located on the remaining portion of said roller intended to contact the side of the copy paper having the unfixed toner image thereon.

4,285,296

LUBRICATING APPARATUS

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 881,057, Feb. 24, 1978, abandoned. This application Jun. 12, 1978, Ser. No. 914,559
Int. Cl.³ B05C *1/04;* B05B *5/02*
U.S. Cl. 118—630 **6 Claims**



1. Apparatus for applying a lubricating material to a fast moving strip comprising

means forming a vertical deposition chamber having smooth side walls, a roof slanted at an acute angle with respect to the side walls on each side of the chamber at its top,

second means to move the strip rapidly through the deposition chamber along its central plane,

a plurality of sources of lubricating particles spaced in each side of the deposition chamber intermediate its top and bottom,

each of said sources comprising means forming a horizontal chamber outside of the deposition chamber, opening into said deposition chamber, and containing a supply of lubricating material,

each of said sources having a plurality of compressed air atomizers supplied from said supply of lubricating material in said horizontal chamber and directing a spray of particles of said lubricating material particles at said supply within said horizontal chamber to remove the larger particles of lubricating material from said spray,

the plurality of atomizers of each source of lubricating particles being grouped into individually controllable units, the atomizers being formed in circular blocks by providing each circular block with a plurality of bores adjacent its periphery, and providing in each bore a nozzle-forming member and an atomizing orifice member, said block having a slotted periphery with said slot communicating with the supply of lubricating material and intersecting each of said bores between said nozzle-forming member and atomizing orifice member,

each controllable unit including a portion of the total number of atomizers in the source, the individually controlled units being spaced across the horizontal chamber and controllable to provide a uniform source of lubricating particles through said opening of the horizontal chamber permitting the smaller particles to be urged into the deposition chamber by the residual flow of compressed air from said atomizers, and

electrostatic electrode means supported at each end by the end walls of said deposition chamber and on each side of its central plane, said electrode means being connected with a source of high electrical potential.

4,285,297

MAGNETIC BRUSH DEVELOPING DEVICES

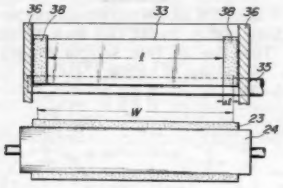
Yoshiro Suzuki, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 29, 1979, Ser. No. 99,191

Claims priority, application Japan, Dec. 2, 1978, 53-166452[U]

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—657 **4 Claims**



1. An improved magnetic brush developing device comprising: a housing for containing a developing agent, a magnetic brush assembly including a tubular sleeve made of non-magnetic material and a permanent magnet assembly arranged inside said sleeve, a hopper for containing toners and provided at its lower end with an opening through which the toners are supplemented to said developing agent, a toner supplying roller rotatably journalled in said lower opening of said hopper and having a longitudinal recess for receiving a given amount of toners from said hopper, and a resilient plate having one end secured to an inner wall of said hopper, the other free end being operative to engage with said longitudinal recess of said roller, the improvement comprising: a stopper engagable with two side edges of said resilient plate and with the inner sidewalls of said housing and extending in a direction perpendicular to the axial direction of said toner supplying roller, whereby, a length of said toner supply opening of said hopper is smaller than a maximum width of an electrostatic charge image to be developed by said developing device, and said stopper being deformable in response to the displacement of said resilient plate.

4,285,298

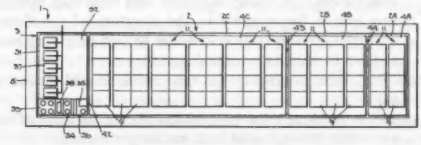
METHOD AND APPARATUS FOR REARING POST-LARVAE SHRIMP

Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Filed Oct. 19, 1978, Ser. No. 952,664

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **30 Claims**



1. A system for rearing post-larvae shrimp comprising:

a first rearing tank for retaining shrimp for an initial post-larvae period of growth;

first habitat means locatable within said first rearing tank for providing habitats for shrimp, said first habitat means including

a first plurality of vertically-spaced substrate means arranged in individual groups, each substrate means providing a surface area to which shrimp can cling and having openings therein for permitting the passage of fluid therethrough, said first plurality of substrate means having a first combined total surface area, and

frame means for supporting the individual groups of substrate means of said first plurality of substrate means;

a second rearing tank for retaining shrimp for a period of growth subsequent to said initial post-larvae period of growth, said second rearing tank having a common wall with said first rearing tank;

second habitat means locatable within said second rearing tank for providing habitats for shrimp, said second habitat means including

a second plurality of vertically-spaced substrate means arranged in individual groups, each substrate means being of the same construction as the substrate means of said first habitat means, said second plurality of substrate means having a second combined total surface area which is greater than said first combined total surface area, and

frame means for supporting the individual groups of substrate means of said second plurality of substrate means; and

means for moving said first and second habitat means into and out of said first and second rearing tanks.

4,285,299

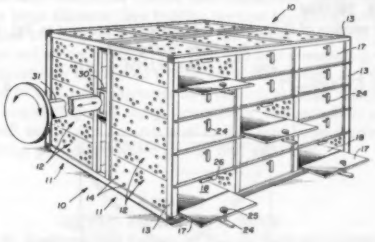
METHOD AND APPARATUS FOR COLLECTING POULTRY

Doverd E. Thomas, 2319 Fairway Cir., SE., Decatur, Ala. 35601

Filed Jun. 29, 1979, Ser. No. 53,357

Int. Cl.³ A01K *31/00*

U.S. Cl. 119—17 **4 Claims**



3. Apparatus for the collection of poultry, comprising:

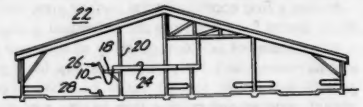
a. a pair of enclosures each having walls and a floor, said walls having therein perforations for ventilation,

b. each of said enclosures having a door pivotally connected to the enclosure in alignment with the floor of said enclosure, said doors being such that a bird placed on the door will slide along the door when said door is inclined at an angle of about 12°–20° from horizontal, said enclosures being secured together in a side-by-side relationship to form a bank of enclosures, said bank having attached thereto a member adapted to support and incline said bank when said member is pivoted.

4,285,300
ANIMAL FEEDING SYSTEM

Victor L. Spane, 27004 - 64th NW., Stanwood, Wash. 98292

Filed Nov. 19, 1979, Ser. No. 95,583
Int. Cl.[3] A01K 5/00
U.S. Cl. 119—58 1 Claim

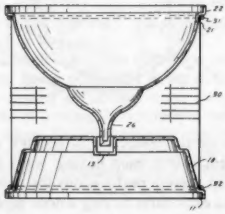


1. In an animal feeding system:
a hay feeding station,
elevated hay feeder apparatus located at said station, comprising:
(a) an aligned and integrated plurality of laterally spaced-apart, U-shaped bar-like members attached to longitudinal bar means forming an upwardly open, openwork manger for hay,
(b) a mow suspending a side of said manger at such height above the floor or ground level that feeding animals tend to raise their heads to pull hay from the lower portion of said container between said U-shaped members, said manger having an upstanding fender opposite said mow,
(c) means permitting access to said elevated hay feeder apparatus from below, whereby hay placed in said apparatus may be consumed, and
(d) curb means at said station extending approximately the length of and being located beneath the proximate margin of said manger relative to feeding animals whereby said curb means may be contacted by the front legs of animals tending to intrude underneath the manger and operable to discourage them from occupying and soiling the space beneath the said manger.

4,285,301
BIRD CAGE

Josef Voss, Haus Dreizehneichen, 5760 Arnsberg 1, Fed. Rep. of Germany, assignor to Josef Voss, Arnsberg, Fed. Rep. of Germany

Continuation of Ser. No. 907,866, May 19, 1978, Pat. No. 4,210,100. This application Jul. 9, 1979, Ser. No. 56,102
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805866
The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.
Int. Cl.[3] A01K 31/06, 31/08
U.S. Cl. 119—17 6 Claims

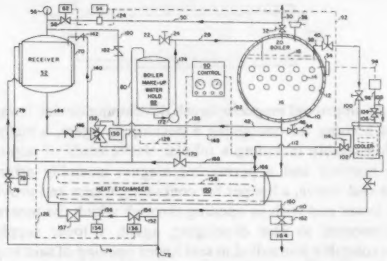


1. A collapsible bird-container of the cage type, comprising an elongated cage-type barrel having a rigid peripheral wall bounding the interior of the barrel and an upper and a lower open end; a first discrete end closure detachably mountable on said barrel in an operative position for closing said upper end, said first closure being formed with a first reduced cross-section portion directed upwardly when said closure is installed on said barrel in said operative position; a second discrete end closure detachably mountable on said barrel in an operative position for closing said lower end, said second closure also being formed with a second reduced cross-section portion directed downwardly when said second closure is installed on said barrel in said operative position, at least one of said end closures being invertable to a storage position in which the reduced cross-section portion thereof extends into and said one end closure is received substantially completely in said barrel to thereby decrease the overall height of the container in order for the container to require less space for storage or transport; and means for detachably securing said end closures to said barrel in at least said operative positions.

4,285,302
BOILER BLOWDOWN SYSTEM

Thomas J. Kelly, 537 N. Euclid, Oak Park, Ill. 60302

Filed Dec. 26, 1978, Ser. No. 972,892
Int. Cl.[3] F22B 37/54
U.S. Cl. 122—382 19 Claims



1. A boiler blowdown apparatus for a boiler having a steam outlet and a bottom blowdown outlet, which comprises:
means for receiving blowdown water from said bottom outlet of said boiler, said receiving means having a one-way top inlet, and a one-way bottom outlet to conduct said blowdown water therefrom and a first valve-controlled steam pressure conduit connected to said steam outlet of said boiler;
heat exchanger means connected to said one-way bottom outlet of said receiving means for cooling said boiler water;
second valve means, normally closed in a first position, adapted to control the flow of blowdown water from said boiler into the top inlet of said receiving means in a second position and adapted to allow the flow of blowdown water from the bottom outlet of said receiving means in a third position;
means monitoring a condition of said boiler water in said boiler to produce a signal to indicate the need for a blowdown cycle;
means responsive to said signal to operate said second valve means in timed sequence from said first position to said second position and thereby pass a portion of blowdown water from said boiler to charge said receiving means;
timing means for controlling the duration of the flow of blowdown water from said boiler to said receiving means and for producing a second signal;
cooling water control means responsive to said second signal;
means to produce a third signal to indicate the flow of coolant water through said heat exchanger means;
means responsive to said third signal to operate said second valve means from said second position to said third position and thereby pass blowdown water from said receiving means and simultaneously open said first valve means of said steam pressure conduit to purge said receiving

means and pass said boiler water to said heat exchanger means; and,

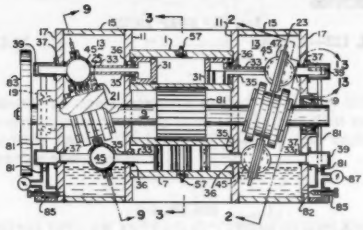
means controlling the rate of cooling of said water and the rate of discharge from said heat exchanger means.

4,285,303

SWASH PLATE INTERNAL COMBUSTION ENGINE

Charles Leach, P.O. Box 212, Redwood Valley, Calif. 95470

Filed Apr. 19, 1979, Ser. No. 31,320
Int. Cl.³ F02B 75/26
U.S. Cl. 123—51 BA **10 Claims**



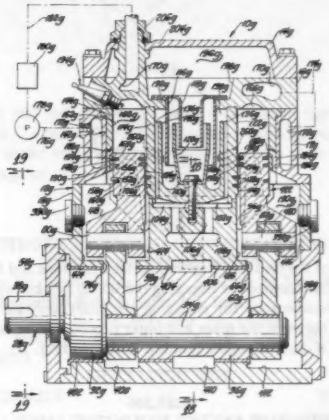
1. An internal combustion engine having at least a pair of parallel cylinders, a drive shaft parallel to and symmetrically disposed with respect to said cylinders, said drive shaft having a journal portion inclined to its axis, a swash plate held against rotation and mounted on said journal portion to produce rotation of said drive shaft, a piston in each of said cylinders having a rigid axial extension arranged for axial movement only relative to the respective cylinder, and connections of said piston extensions to said swash plate for transmitting axial movements of said extensions to said swash plate and thereby producing rotation of said drive shaft, said connections being reciprocable radially of said swash plate journal portion and parallel to the plane of said swash plate, wall means forming a chamber distinct from said cylinders and enclosing said swash plate, the adjacent portions of said drive shaft and of said piston extensions and said connections, said chamber being adapted to contain a liquid lubricant, each said piston extension being formed with an internal axial passage, there being an opening in said swash plate to accommodate movement of said connections relative to said swash plate, said connections defining with said opening a sealed lubricant recess having an inlet from said chamber and an outlet communicating with the respective piston extension passage, said pistons being formed with passage means connecting said piston extension passages with the peripheries of the respective pistons whereby reciprocating movements of said connections of said piston extensions to said swash plate radially with respect to said drive shaft during operation of the engine draw lubricant from said chamber into said swash plate opening and force it into said piston extension passages and therethrough into the peripheral space between the respective pistons and cylinder walls to lubricate and cool said cylinders, wherein each said connection between each piston extension and the swash plate comprises a ball mounted on the respective piston extension, and a spherical socket surrounding said ball, the openings in said swash plate being slightly larger than the periphery of said spherical socket and receiving said socket for movement therein, said socket having spaced parallel external flanges slidably embracing the opposite surfaces of said swash plate along the margin of said swash plate, whereby as the respective sockets move with respect to the swash plate, they draw lubricant into the respective opening from the chamber outwardly of said shell and force such lubricant through the tubular piston extension and piston passages into peripheral regions of said piston, and further including apertures in the wall means aligned with the respective piston extensions slidably receiving the ends of said piston extensions, covers for said piston extensions outwardly of said apertures, and passage means connecting said piston extension covers with said chamber.

4,285,304

INTERNAL COMBUSTION ENGINE

William V. Bachmann, 22517 Ten Mile Rd., St. Clair Shores, Mich. 48080

Filed Aug. 13, 1979, Ser. No. 66,475
Int. Cl.³ F02B 75/18
U.S. Cl. 123—52 B **68 Claims**



1. An internal combustion engine, comprising an engine housing, an annular cylinder with a combustion chamber formed in said housing, said annular cylinder comprising a first radially inner annular wall and a second radially outer annular wall, a ring-like piston received in said annular cylinder for reciprocating movement therein, and motion transmitting means operatively connected to said ring-like piston for transmitting the power developed by the reciprocating movement of said ring-like piston to associated output power consuming means, said motion transmitting means comprising crankshaft means and connecting rod means, said connecting rod means being effective for operatively interconnecting said ring-like piston to said crankshaft means, said crankshaft means comprising a large diameter live bearing portion journalled within said engine housing, said connecting rod means comprising at least first and second connecting rods, said first connecting rod being operatively connected to said crankshaft means at a first axial end of said large diameter live bearing portion, and said second connecting rod being operatively connected to said crankshaft means at a second axial end of said large diameter live bearing portion opposite to said first axial end.

4,285,305

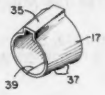
KEYED ADAPTER SLEEVE

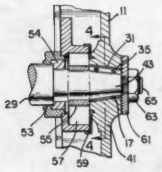
Vernon R. Kaufman, and Eugene L. Nelson, both of Cedarburg, Wis., assignors to Tecumseh Products Company, Tecumseh, Mich.

Filed Nov. 16, 1979, Ser. No. 94,776
Int. Cl.³ F02P 3/06
U.S. Cl. 123—146.5 A **21 Claims**

1. An arrangement for adapting a standardized wheel and included portion of an ignition system to any of a number of different ignition systems and their associated different timing requirements on any of a number of different internal combustion engines including at least two different size engine driven shafts having tapered surface portions for rotatably supporting the standardized wheel wherein the standardized wheel has a wheel hub integral therewith having a tapered central opening

matable with a larger of the two shaft tapered surface portions, and the shaft tapered surfaces and the wheel hub tapered central opening each contain a keyway, comprising a generally frustoconical sleeve having an outer surface matable with the wheel hub central opening and an inner surface matable with a





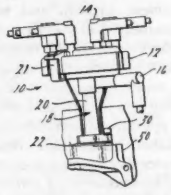
smaller of the two shaft tapered surface portions and having an outer protuberance for engaging the wheel hub keyway and an inner protuberance for engaging the shaft keyway with the spacing between the inner and outer protuberances selected to provide a desired engine ignition timing setting.

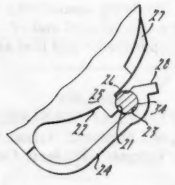
4,285,306

DISTRIBUTOR ENGINE MOUNTING MECHANISM

David H. Fox, Ann Arbor; Robert L. Kuhn, Dearborn, and Charles C. Kostan, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,679
Int. Cl.³ F02P 7/02
U.S. Cl. 123—146.5 A **8 Claims**





1. A mechanism for mounting and retaining a distributor assembly in a predetermined fixed position on an engine housing comprising:

a post mounted on said engine housing, wherein said post has a shank portion extending from said housing and an upper shoulder portion at the end of said shank remote from said housing;

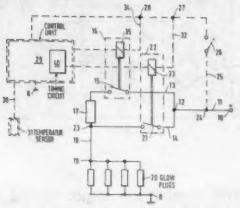
means on said distributor for fixedly engaging said shank portion of said post when said distributor is rotated into said predetermined position.

4,285,307

METHOD OF PREHEATING AN INTERNAL COMBUSTION ENGINE OF THE DIESEL, OR SIMILAR, TYPE

Leo Steinke, Waiblingen-Hegnach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,469
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829700
Int. Cl.³ F02P 19/02
U.S. Cl. 123—179 BG **20 Claims**



1. In an internal combustion engine requiring preheating for example a Diesel engine, having electrical glow plugs (20, 20'), an electrical circuit (10, 18, 19, 19', 20, 20', 36, R) including said glow plugs, said circuit having positive temperature coefficient of resistance characteristics, and including a current limiting resistor (17) and a controlled first switch (15) serially connected with the glow plugs to control current flow and its intensity thereto, and a controlled second switch (21) connected across the current limiting resistor to selectively short-circuit said resistor upon closing of said second switch,

the method of preheating which comprises, in accordance with the invention,

controlling said first switch (15) to close and thereby energize the electrical circuit and hence pass limited current through the glow plugs (20, 21') and the current limiting resistor (17) while said second switch (21) is in open condition;

then, when a first predetermined time period (t_1) of less than 1 second after energization of the glow plugs has elapsed controlling said second switch (21) to short-circuit the current limiting resistor (17);

and passing current through said electrical circuit directly to the glow plugs for a second predetermined time period (t_2) of at least 2 seconds to rapidly heat the glow plugs.

4,285,308

COLD START FUEL ENRICHMENT SYSTEM

James M. Hundertmark, Fond du Lac, and James L. Wagner, Butte des Morts, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.

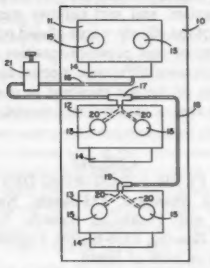
Filed May 14, 1979, Ser. No. 38,599
Int. Cl.³ F02M 1/16
U.S. Cl. 123—187.5 R **10 Claims**

1. A cold start fuel enrichment system for a multi-cylinder internal combustion engine comprising:

A. a plurality of independently operable engine air induction passages each for a different cylinder, each induction passage at a different height on said engine, and each of said induction passages including a carburetor;

B. a fuel passageway connecting the float bowl of the highest of said carburetors to a lower one of said induction passages at a point below said highest float bowl; and

C. a valve means for controlling the flow of fuel through said fuel passageway,



whereby fuel can be directed to flow by gravity into said lower induction passage from said highest float bowl to provide fuel to the lower cylinders of said engine for starting said engine.

4,285,309

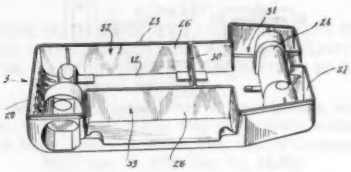
HOUSING FOR AN INTERNAL COMBUSTION ENGINE

Rolf A. G. Johansson, Unnaryd, Sweden, assignor to Jonsereds Aktiebolag, Partille, Sweden

Filed Nov. 13, 1979, Ser. No. 94,039

Int. Cl.³ F02B *77/02*; F02F *7/00*; B23D *57/02*

U.S. Cl. 123—195 C **10 Claims**



1. An engine housing for an internal combustion engine of the type used in chain saws having separate chambers for fuel and lubricating oil comprising: upper and lower portions of said engine housing that are joined along a dividing plane that is substantially parallel to the bottom surface of said lower portion and intersecting the crankshaft of said engine whereby substantially closed cavities forming said chambers for said fuel and lubricating oil are created.

4,285,310

DUAL INTAKE VALVE TYPE INTERNAL COMBUSTION ENGINE

Masaaki Takizawa, Mishima; Noboru Matsubara, and Kazuo Takahashi, both of Susono, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 10, 1979, Ser. No. 28,823

Claims priority, application Japan, May 25, 1978, 53-61733

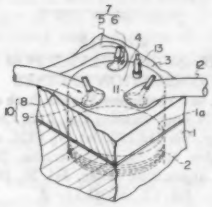
Int. Cl.³ F02B *31/02, 25/00*

U.S. Cl. 123—308 **6 Claims**

1. A dual intake valve system for use in an internal combustion engine, said valve system comprising:

(a) a main intake valve means including means for generating a swirl motion in the intake gas; said intake valve means being operated by a main cam having a cam profile for low speed, said main cam being synchronized with the crankshaft of the engine; and

(b) an auxilliary intake valve means operated in synchronization with the crankshaft of the engine, said auxilliary intake valve means including variable valve lifter means for lifting said auxilliary intake valve means as a function of engine operating conditions and engine speed, wherein when the flow of intake gas is small, said auxilliary intake valve means does not operate and said auxilliary intake valve means is normally closed and wherein when the flow of intake gas is large, both said main intake valve



means and said auxilliary intake valve means operate to permit the flow of gas simultaneously through both said main intake valve means and said auxilliary intake valve means prior to ignition.

4,285,311

TWO STROKE ENGINE HAVING EXHAUST PORT TIMING CONTROL VALVE

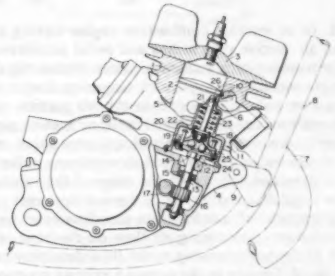
Toshimitsu Iio, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 27, 1979, Ser. No. 61,514

Claims priority, application Japan, Jul. 31, 1978, 53/105173[U]

Int. Cl.³ F02D *9/06*

U.S. Cl. 123—323 **5 Claims**



1. A two stroke engine comprising cylinder means and piston means received in said cylinder means for reciprocating movement, said cylinder means having exhaust port means adapted to be closed by said piston means, exhaust port timing control rotary valve means provided in said exhaust port means at an upper portion thereof, said valve means being movable between a projected position wherein it is projected into said exhaust port means to thereby cover an upper portion of said exhaust port means and a retracted position wherein it is retracted from said exhaust port means, actuator means for moving said valve means between said projected and retracted positions in accordance with engine speed, said actuator means including actuating rod means connected between said valve means and centrifugal means responsive to said engine speed and spring means forcing said valve means toward the projected position so that said valve means is moved toward the retracted position in response to an increase in engine speed, said valve means being located with a longitudinal axis perpendicular to a longitudinal axis of said cylinder means and actuating arm means secured to one end thereof, said actuating arm means extending from said valve means substantially perpendicular to the axis of the valve means toward said cylinder

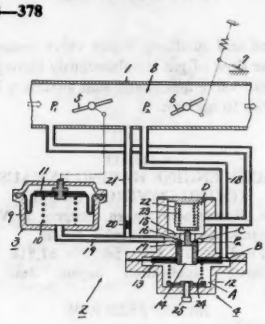
means and being connected with said actuating rod means so that said valve means is actuated under the influence of said centrifugal means, said actuating rod means extending substantially parallel with a longitudinal axis of said cylinder means so that said actuator means is located in a minimum space.

4,285,312

AIR FLOW MEASURING DEVICE FOR INTERNAL COMBUSTION ENGINES

Tsugito Nakazeki, and Yoshinobu Yasuda, both of Iwata, Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Continuation of Ser. No. 710,127, Jul. 30, 1976, abandoned. This application Apr. 11, 1979, Ser. No. 29,027
Claims priority, application Japan, Jul. 31, 1975, 50-93971
Int. Cl.³ F02D *11/08*
U.S. Cl. 123—378 **6 Claims**



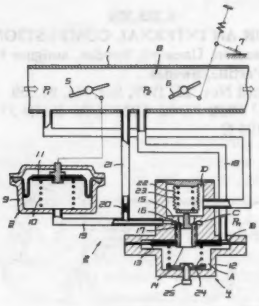
1. In an internal combustion engine having a fuel control unit, air suction pipe means and pedal accelerator means, the improvement of a suction air flow measuring device of the weight-rate of flow type, said measuring device comprising an upstream valve positioned in the air suction pipe means, a downstream valve positioned in the air suction pipe means, and in series downstream from said upstream valve, one of the said upstream valve and the said downstream valve serving as a flow detection valve with the other of the valves serving as a flow regulating valve, one of the said upstream valve and said downstream valve defining an area flowmeter for determining the amount of incoming air flow on the basis of the opening area of the valve serving as the flow detection valve by keeping the difference in the pressure existing on opposite sides of the valve serving as the flow detection valve constant; pressure-sensitive amplifier means operatively associated with said defined area flowmeter, said amplifier means including a first chamber communicating with the upstream side of the valve serving as the flow detection valve, a second chamber communicating with the downstream side of the valve serving as the flow detection valve, said pressure difference setting diaphragm being disposed between the two chambers to partition them and positioned so that the relationship of pressures applied thereon keeps its balance under a selected reference pressure difference and a variable flow orifice having an opening area which is varied in association with the movement of the diaphragm so as to vary an output or control pressure to the valve opening device, said valve opening device being operatively connected with the valve serving as the flow detection valve to operate the same in the opening and closing direction with the output from the amplifier means, said variable orifice being a spool valve fixed to the pressure difference setting diaphragm and having a valve seat fixed to a main body, said pressure-sensitive amplifier means and said valve opening means defining a flow servomechanism, one of the upstream valve and the downstream valve serving as the flow regulating valve being operatively connected to the pedal accelerator means with the other of the valves serving as the flow control valve being operatively connected to the fuel control unit; and gas-filled bellows means operatively connected to the pressure difference setting diaphragm of said amplifier means whereby said association of said defined area flowmeter, said defined flow servomechanism, and said bellows means will be such that the product of the effective area of said pressure difference setting diaphragm of said pressure-sensitive amplifier means and a reference pressure difference is equal to the product of a reference pressure of the gas enclosed in said bellows means and the effective area of said bellows means.

4,285,313

AIR FLOW MEASURING DEVICE

Tsugito Nakazeki, Shunpuso, 133-banchi, Nakano, Iwata-shi, Shizuoka-ken, and Yoshinobu Yasuda, 541-go, Company House of Toyo Bearing, 1358-banchi, Higashikaizuka, Iwata-shi, Shizuoka-ken, both of Japan

Continuation-in-part of Ser. No. 29,027, Apr. 11, 1979, which is a continuation of Ser. No. 710,127, Jul. 30, 1976, abandoned. This application Jun. 29, 1979, Ser. No. 53,261
Claims priority, application Japan, Jul. 31, 1975, 50-93971
Int. Cl.³ F02D *11/08*
U.S. Cl. 123—389 **2 Claims**



1. Apparatus for determining and controlling the mass rate of flow of air for use in an internal combustion engine having an air intake conduit comprising:

A. an air throttle valve for controlling the flow-rate of air in said air intake conduit;

B. an air flow detection valve located in said air intake conduit to produce a pressure difference over a portion of the air intake conduit; and

C. a servo-mechanism operable to adjust the air flow detection valve to maintain the pressure difference at a control value adapted to be varied in inverse proportion to the specific gravity of the intake air of the engine so that the opening area of the flow detection valve is made proportional to the mass rate of flow of air past the flow detection valve, said servo-mechanism including

a. pressure-sensitive amplifier means for producing an amplified actuating pressure in an air flow path formed between the throttle and detection valves in response to any variations of the pressure difference from the control value, said amplifier means including

i. a pressure-responsive diaphragm subjected on opposite sides to the air pressure existing on opposite sides of the air flow detection valve and movable in response to any variation in the pressure difference,

ii. a variable flow orifice connected in said air flow path and having an opening area which is varied in association with the movement of said diaphragm to produce a variation in the actuating pressure, and

iii. setting means for varying said control value in inverse proportion to the specific gravity of the intake air, and

b. valve opening means operatively connected to the

pressure-sensitive amplfier means to receive the actuating pressure and to the air flow detection valve to adjust said flow detection valve in response to any variation in said actuating pressure;

said setting means for varying the control value in inverse proportion to the specific gravity of the intake air comprising resiliently deformable bellows located in a chamber which in turn is connected to said air flow path, said resiliently deformable bellows being operatively connected at one end to said diaphragm of the pressure-sensitive amplifier means and at the other end to a main body of the pressure-sensitive amplifier means with the arrangement being such that a force produced by said bellows acts as a counterforce against a force produced by the diaphragm due to the pressure difference, said bellows being filled with a given mass of a gas in such a manner that when the intake air surrounding the bellows is at its reference temperature, the gas pressure in the bellows becomes equal to a reference pressure of the intake air, said bellows having an effective pressure-sensitive-area equal to: (the effective pressure-sensitive-area of the diaphragm)×(the control value under a reference condition of the intake air)÷(the gas pressure in the bellows being equal to the reference pressure of the intake air),

whereby said control value is determined in accordance with the resultant force of a force due to the resilient deformation of the bellows and a force produced by the bellows in response to alteration in temperature and pressure of the intake air and thereby being varied in inverse proportion to the specific gravity of the intake air of the engine.

4,285,314

SYSTEM TO DECREASE OPERATING JOLTS IN A VEHICLE BY CONTROLLING FUEL AND IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE THEREIN

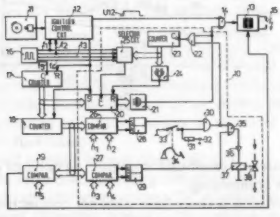
Uwe Kiencke; Werner Jundt, both of Ludwigsburg, and Karl Seeger, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 27, 1979, Ser. No. 52,342

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1978, 2834638

Int. Cl.³ F02P 5/14

U.S. Cl. 123—422 **17 Claims**



1. An internal combustion engine system having

spark generating means,

means for furnishing a sequence of ignition timing signals each for initiating generation of a spark by said spark generating means,

fuel supply means,

control means connected to said fuel supply means for decreasing said fuel supply from a normal operating supply level during no-load operation of said internal combustion engine and for subsequently re-increasing said supply of said fuel back to said normal operating supply in response to loading on the engine for operation thereof under a predetermined operating condition,

and comprising, in accordance with the invention

means connected to said control means to decrease the jolt on the engine upon re-increase of fuel supply to a normal operating level upon loading of the engine comprising

delay means for initiating an ignition timing delay, in response to said re-increase of fuel supply, thereby delaying at least the first of said ignition timing signals occurring after the start of said re-increasing of said fuel supply, thereby retarding said generation of said spark and decreasing the torque applied to said engine.

4,285,315

METHOD AND DEVICE FOR AUTOMATICALLY ADJUSTING THE SPARK ADVANCE OF A CONTROLLED IGNITION ENGINE

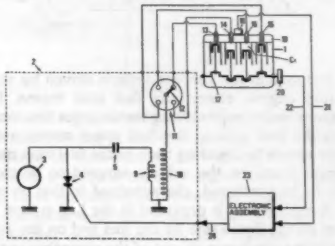
Andre Dousud, Puteaux, and Joseph Rialan, Meudon, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 945,711, Sep. 25, 1978, Pat. No. 4,213,429. This application Mar. 25, 1980, Ser. No. 133,746

Claims priority, application France, Sep. 26, 1977, 77 29105

Int. Cl.³ F02P 5/04

U.S. Cl. 123—425 **9 Claims**



1. A method for automatically adjusting the ignition timing of a controlled ignition engine to the optimum value of this timing for any working condition of the engine corresponding to the maximum output and efficiency of the engine, wherein the ignition timing is so adjusted that the pressure peak in at least one cylinder occurs at a predetermined angular position of the drive shaft of the engine, this method comprising:

determining the angular position of the drive shaft,

detecting the accelerations at a location on the cylinder head of the engine and providing, during at least a selected fraction of the rotation of the drive shaft and in a low frequency band, a first signal corresponding to these accelerations,

integrating said first signal to obtain a second signal for determining the null value of said second signal with respect to the angular position of the drive shaft, and

adjusting the ignition timing as a function of the angular position of the drive shaft corresponding to the determined null value of said second signal.

5. A device for automatically adjusting the ignition timing of an engine, comprising ignition control means and a detector of the angular rotation of the engine drive shaft, wherein the device comprises an accelerometer secured to the cylinder head of the engine for generating a first signal representing the accelerations to which the cylinder head is subjected at the point of location of the accelerometer, a low pass filter connected to said accelerometer for filtering said first signal, an integrator connected to said filter for generating a second signal, first detecting means connected to said integrator for detecting a zero value of said second signal during at least a portion of the rotation of the engine drive shaft, second detecting means connected to said means for detecting the zero value of the second signal and to said detector of angular rotation, for detecting the angular position of the drive shaft corresponding to the zero value of the second signal, comparing means connected to said second detecting means for measuring the difference between said angular position and a reference

angular position, and adjusting means connected to said comparing means for adjusting said ignition control means as a function of said difference.

4,285,316

FUEL SYSTEM FOR A MOTOR VEHICLE

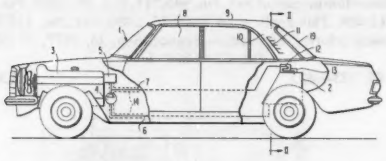
Albert Stolz, Tübingen; Erich Thiel, Esslingen; Volker Bochenek, Denkendorf, and Roland Stoklassa, Nürtingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 76,816

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841557

Int. Cl.³ F02M *31/20*

U.S. Cl. 123—514 **23 Claims**



1. A fuel system for a motor vehicle driven by an internal combustion engine, comprising fuel tank means, fuel feed pump means, mixture-producing means, inlet line means leading from the fuel tank to the fuel pump means, return line means for excess fuel leading back to the fuel tank means, and a passenger space on the vehicle adapted to be closed and operable to be ventilated, characterized in that an air/liquid heat-exchanger means is provided in the fuel system which is traversed on the liquid side by the fuel and on the air side by the ventilating discharge air out of the passenger space.

4,285,317

EXHAUST GAS RECIRCULATION SYSTEM

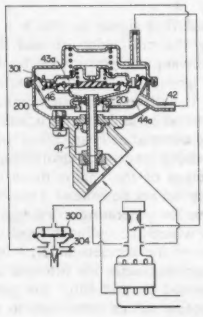
Yasuo Takahara, Oobu; Shigeo Hayashi, Okazaki; Shizuo Yamada, Kariya, and Norio Shibata, Susono, all of Japan, assignors to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha

Filed Dec. 19, 1979, Ser. No. 105,119

Claims priority, application Japan, Apr. 13, 1978, 53-49124

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 **4 Claims**



1. An exhaust gas recirculation system having: an exhaust gas control valve disposed in the exhaust gas recirculation passage providing a communication between the exhaust pipe and the intake pipe of an internal combustion engine, said exhaust gas controlling valve having an atmospheric chamber defined by a diaphragm and a case provided with an atmospheric port, a first diaphragm chamber defined by said diaphragm and a cover and adapted to receive a signal vacuum derived from the portion in the intake pipe near a throttle valve, and a valve body operatively connected to said diaphragm and adapted to open and close said exhaust gas recirculation passage; and a pressure regulating valve having a second diaphragm chamber and a third diaphragm chamber which are separated from each other by a diaphragm, said second diaphragm chamber being adapted to receive a pressure generated in an exhaust pressure controlling chamber which is defined in said exhaust gas recirculation passage immediately upstream from said valve body of said exhaust gas recirculation passage, said pressure regulating valve being adapted to regulate said signal vacuum by opening and closing the passage between said third diaphragm chamber and said first diaphragm chamber of said exhaust gas control valve; characterized by comprising inner cases disposed in said case and said cover of said exhaust gas control valve and defining said second and third diaphragm chambers of said pressure regulating valve; and a shaft connecting said valve member to said inner case defining said second diaphragm chamber, said shaft and said valve member being made hollow to provide a communication between said second diaphragm chamber and said exhaust pressure control chamber whereby said exhaust gas control valve and said pressure regulating valve being made unitary and the pressure in said third diaphragm chamber is controlled in connection with the state of operation of said engine.

4,285,318

EXHAUST GAS RECIRCULATION SYSTEM HAVING FLOW CONTROL VALVE COMBINED WITH SUPERSONIC NOZZLE

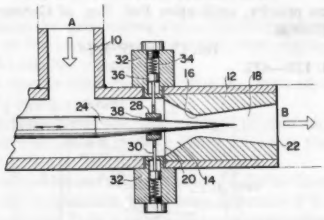
Kenji Yoneda, Yokohama; Tadahiro Yamamoto, Yokosuka, and Kunihiko Sugihara, Yokohama, all of Japan, assignors to Nissan Motor Company, Ltd., Japan

Filed Aug. 1, 1975, Ser. No. 601,053

Claims priority, application Japan, Aug. 5, 1974, 49-90051

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—568 **8 Claims**



1. In an internal combustion engine, an exhaust gas recirculation system comprising:

means defining a fluid flow channel connecting an exhaust passage of the engine to an induction passage of the engine to recirculate a portion of the exhaust gas therethrough;

a converging-diverging nozzle circular in cross section disposed at an intermediate section of said channel for flowing recirculated exhaust gas therethrough, said nozzle having a throat and having a converging section and a diverging section shaped such that the velocity of the recirculated exhaust gas is sonic at the throat of said nozzle when a pressure difference between the entrance and exit pressures of said nozzle exceeds a predetermined magnitude;

a conical valve member in said nozzle coaxially therewith to extend through said throat;

the surface of said valve element and inner surfaces of the diverging section defining therebetween an angle from about 7 to 10 degrees in longitudinal section; and

means for supporting and moving said valve member axially

thereby to vary the cross-sectional area of said channel at said throat.

4,285,319

AIR FLOW AMOUNT ADJUSTING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

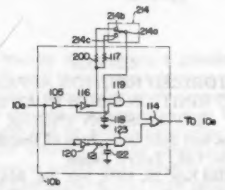
Tadashi Hattori, Okazaki; Akira Takata; Tamotsu Fukuda, both of Toyota, and Takamichi Nakase, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Division of Ser. No. 30,953, Apr. 17, 1979, Pat. No. 4,192,268, Continuation of Ser. No. 798,948, May 20, 1977, abandoned. This application Nov. 6, 1979, Ser. No. 91,755

Claims priority, application Japan, May 28, 1976, 51-62542; May 31, 1976, 51-63325

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—585 **4 Claims**



1. In an additional air supply system for an internal combustion engine comprising:

a combustion chamber for producing combustion therein;

an intake system operatively communicated with said combustion chamber for supplying thereto an air-fuel mixture;

an exhaust system operatively communicated with said combustion chamber for conveying an exhaust gas from said combustion chamber to the atmosphere;

an additional air supply pipe communicated with at least one of said intake and exhaust systems for supplying additional air thereto, thereby controlling the air-fuel ratio of said air-fuel mixture at a desired value;

air-fuel ratio detecting means disposed in said exhaust system for detecting the air-fuel ratio of the air-fuel mixture supplied with said additional air;

control means operatively disposed in said additional air supply pipe for controlling the amount of the additional air to be supplied;

drive means operatively connected with said control means for driving the same; and

a control circuit electrically connected with said air-fuel ratio detecting means and said drive means for intermittently actuating said drive means in response to the detected air-fuel ratio;

the improved control circuit comprising:

an air fuel ratio discriminating circuit connected with said air-fuel ratio detecting means for comparing the output from said detecting means with a preset level and for generating a high level or a low level signal based on the comparison;

means for stopping the actuation of said drive means in response to change of said signal from one level to the other for a period following a level change to prevent an erroneous operation of said control means, including a first monostable multivibrator connected to said discriminating circuit for producing a timing pulse for a predetermined period following change from a first to a second level, a second monostable multivibrator connected to said discriminating circuit for producing a timing pulse for a predetermined period following change from said second to said first level, logic means connected to said first and second multivibrators and said discriminating circuit and connected to said driving means for causing actuation of said driving means in accordance with said signal from said discriminating means and preventing actuation during said timing pulses.

4,285,320

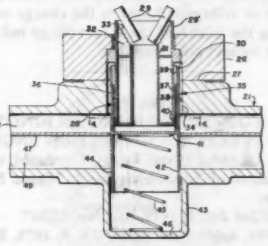
VARIABLE CAPACITY FUEL DELIVERY SYSTEM FOR ENGINES

Sherwood F. Webster, 7832 Via Marina, Scottsdale, Ariz. 85258, and Richard L. Heise, 133 E. Garfield, Tempe, Ariz. 85281

Continuation-in-part of Ser. No. 950,470, Oct. 11, 1978, Pat. No. 4,187,820. This application Nov. 28, 1979, Ser. No. 98,033

Int. Cl.³ F02M *29/04*

U.S. Cl. 123—593 **14 Claims**



1. A fuel delivery system for piston engines comprising an intake manifold having a manifold passage for delivering an air-fuel charge to cylinders of an engine from an external air-fuel source, a variable capacity engine demand responsive atomizing valve connected in the manifold passage and being in communication with said source, said valve including a biased atomizing screen assembly and coating fixed screen covering means whereby movement of the screen assembly against the biasing means in response to increasing engine demand causes a progressively greater atomizing screen area to be uncovered in the manifold passage, and a manifold passage variable closure means carried by the screen assembly and moving therewith and progressively increasing the effective cross section of the manifold passage as engine demand increases.

4,285,321

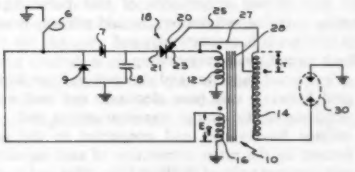
CAPACITOR DISCHARGE IGNITION SYSTEM

Russell D. Phelon, Longmeadow, and Bob O. Burson, East Longmeadow, both of Mass., assignors to R. E. Phelon Company, Inc., East Longmeadow, Mass.

Filed Oct. 19, 1979, Ser. No. 86,340

Int. Cl.³ F02P *3/08, 3/06*

U.S. Cl. 123—599 **5 Claims**



1. In a capacitor discharge ignition system for internal combustion engines having permanent magnetic means, rotatable about a circular path in synchronism with the operation of said machine, a charge coil, a capacitor connected in circuit with said charge coil and an electronic switch means which is rendered conductive in response to a trigger pulse connected to said switch means for discharging said capacitor into the primary winding of a transformer ignition coil, the secondary

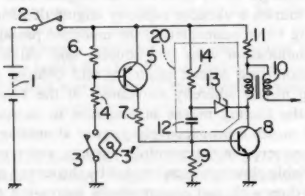
winding of said transformer ignition coil being connected to a spark gap device for said engine, the improvement in said system comprising an integral core of ferromagnetic material including at least one radially extending leg portion disposed adjacent said circular path, said core providing a path for varying magnetic flux generated by the movement thereby of said magnetic means, said coils being wound on said core such that voltages simultaneously induced therein by said varying flux include half wave voltages of opposite polarity, said capacitor being charged by voltage of one polarity generated in the charge coil and the trigger voltage for said electronic switch being derived at least in part from the secondary winding of said ignition coil, the polarity of the trigger voltage generated in said secondary winding being opposite the polarity of the charge coil whereby said capacitor is charged during one half cycle of voltage induced in the charge coil and discharged during the next half cycle of voltage induced in the secondary coil by said changing flux.

4,285,322

APPARATUS FOR CONTROLLING AN IGNITION COIL OF AN INTERNAL COMBUSTION ENGINE

Toshikazu Ina, Okazaki; Hisasi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 2, 1979, Ser. No. 53,847
Claims priority, application Japan, Jul. 5, 1978, 53-81631
Int. Cl.³ F02P *3/02*
U.S. Cl. 123—630 **3 Claims**



1. An apparatus for controlling an ignition system having an ignition coil including a primary winding operatively connected to an electric power source and a secondary winding coupled to a spark plug, said apparatus comprising:

input circuit means for generating a train of pulse signals having first and second magnitudes;

output transistor means having base, collector, and emitter electrodes, said base electrode being connected to the output of said input circuit means and having an emitter-collector path connected in series with one end of said primary winding, said output transistor means being rendered conductive and nonconductive in response to said first and second magnitudes of said pulse signals to thereby energize and deenergize said primary winding of said ignition coil, respectively; and

feedback circuit means comprising:

a series circuit capacitor and constant voltage diode coupled between said base electrode and said collector electrode of said output transistor means, and

a resistor having one end connected to the junction formed by the series connection of said capacitor and said constant voltage diode and the other end connected to the opposite end of said primary winding with respect to the end coupled in series with the emitter-collector path of said output transistor means,

said series circuit capacitor and constant voltage diode allowing a current to flow from said base to said collector of said output transistor means at its transition from nonconduction to conduction thereby gradually increasing a current flowing from said electric power source to said primary winding of said ignition coil thereby reducing a voltage induced in said secondary winding,

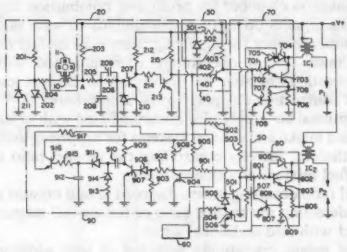
said series circuit capacitor and constant voltage diode blocking a reverse current from flowing from said collector to said base of said output transistor means at its transition from conduction to nonconduction thereby instantly cutting off current flowing through said primary winding and producing a high voltage in said secondary winding, said constant voltage diode being caused to break down when a high voltage exceeding a breakdown voltage thereof is developed at said collector of said output transistor means.

4,285,323

TRANSISTORIZED IGNITION APPARATUS FOR DRIVING IGNITION COILS IN AN INTERNAL COMBUSTION ENGINE

Noboru Sugiura, and Seiji Suda, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 29, 1978, Ser. No. 946,865
Claims priority, application Japan, Sep. 30, 1977, 52-116924
Int. Cl.³ F02P *15/08*
U.S. Cl. 123—638 **8 Claims**



1. A transistorized ignition apparatus for driving two ignition coils of an internal combustion engine comprising:

two power transistor circuits, each having a power transistor for supplying primary current to the corresponding one of the ignition coils;

a pick-up coil for generating an ignition timing signal in response to the operation of the engine;

a wave-form shaping circuit for determining the conduction period of the power transistors of said power transistor circuits on the basis of the ignition timing signal from said pick-up coil;

two driver circuits, each for producing a driving signal to corresponding one of said power transistor circuits on the receipt of an output from said wave-form shaping circuit;

means, each provided for corresponding one of said power transistor circuits and for restricting the current through the power transistor thereof under respective maximum values, wherein one maximum value is preset at the value lower than the other;

means for detecting the duration of the restriction during which the current is restricted under the lower maximum value; and

a feedback circuit for controlling the conduction period of the power transistors determined by said wave-form shaping circuit depending on an output from said duration detecting means.

4,285,324

TOOL FOR TRUEING AND DRESSING A GRINDING WHEEL

Rangachary Komanduri, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 26, 1979, Ser. No. 78,954
Int. Cl.³ B24B 53/12
U.S. Cl. 125—11 R 5 Claims

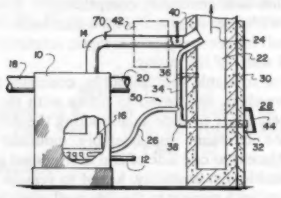
1. A tool for trueing and dressing a grinding wheel at a negative rake angle, said tool having a dressing edge consisting essentially of a side dressing edge angle ranging between 30° and 75° wherein the side dressing edge is at least about 0.5 millimeter in length and an end dressing edge angle ranging between 5° and 30° wherein the end dressing edge is at least about 0.5 millimeter in length and intersects said side dressing edge to provide a nose angle ranging from about 120° to about 165°, said dressing edge having a lip angle ranging from 90° to 120°, and said dressing tool comprising a tool shank and a polycrystalline compact mounted at one end of said shank, said compact comprising bonded crystals selected from the group consisting of diamond, cubic and wurtzite forms of boron nitride and mixtures thereof.

4,285,325

BALANCING AIR DEVICE FOR A HEATING UNIT

Leslie Bellaff, River Edge, N.J., assignor to William W. Weaver, Lynchburg, Va.

Filed Sep. 28, 1979, Ser. No. 80,058
Int. Cl.³ F24H 3/00; F23J 11/00
U.S. Cl. 126—112 5 Claims



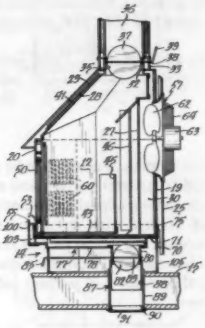
1. A balancing air device for a heating unit in a building having a flue for the passage of waste combustion gases from a combustion chamber in the heating unit and into a stack capable of having a draft flowing therein, comprising, baffle means in the flue for partially constricting flow therein and to provide sufficient flow therethrough when the heating unit is operating, an open valveless fresh outside air line for supplying air from outside the building, an open valveless combustion air line connected between said outside air line and the combustion chamber for supplying air to the combustion chamber, and an open valveless air return line connected directly between said outside air line and the stack for returning air supplied from outside the building into the stack when the heating unit is not operating, with the relative cross-sectional flow area of said outside air line being 3, the relative cross-sectional flow area of said combustion air line and said return air line being from 1 to 3 and from 1 to 3 respectively, so that, when the heating unit is not operating, no air is supplied to the heating unit through the combustion air line and all the air is supplied through the air return line to satisfy a draft in the stack, said return line being connected into the stack through a common opening with the flue of the heating unit.

4,285,326

FIREPLACE CONSTRUCTION WITH ADAPTABLE COMBUSTION AIR INLET

Robert G. Moss, Wisconsin Rapids, Wis., assignor to Preway Inc., Wisconsin Rapids, Wis.

Filed Sep. 11, 1978, Ser. No. 941,007
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 2 Claims



1. A fireplace assembly comprising:

a housing having a firebox with a front opening and a combustion gas outlet adapted to be in fluid communication with a flue;

door means for optionally sealing said front opening;

a base structure for supporting said housing above a supporting surface;

a combustion air inlet in said housing near the bottom of said housing through which combustion air may enter said firebox;

duct means having a downwardly-opening upstream end positioned within and at a distance above the bottom of said base structure and a downstream end positioned adjacent the bottom of said housing below said combustion air inlet;

an optionally usable intake conduit having one end removably connected to the upstream end of said duct means and its other end communicating exteriorly of the structure interior to provide fluid communication for delivery of combustion air from an external source to said duct means;

means in said base structure providing communication between the structure interior and the interior of said base structure whereby combustion air is delivered into the upstream end of said duct means from the structure interior for delivery to said combustion air inlet when the intake conduit is disconnected from said duct means; and

a damper mounted in said duct means to provide selective control of the flow of combustion air through the duct means regardless of which source of air is being utilized.

4,285,327

FIREBOX REFRACTORY FLOOR

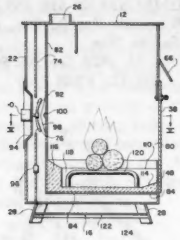
Carrol E. Buckner; C. Glenn Cook, both of Weaverville, and Thomas J. Kane, Asheville, all of N.C., assignors to CEBU Corporation, Asheville, N.C.

Filed Jan. 4, 1979, Ser. No. 951
Int. Cl.³ F24B 13/02
U.S. Cl. 126—143 6 Claims

1. A refractory base for the interior of a firebox of a heating unit comprising:

a horizontal portion for covering the floor of said firebox;

a rear vertical portion adapted to be positioned along the rear of said horizontal portion and having a height substantially less than the height of said firebox with an upper surface inclined downwardly toward the center of said horizontal portion; and



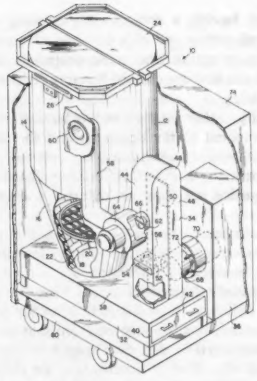
a pair of side vertical portions adapted to be positioned along the sides of said horizontal portion and each of said side vertical portions having a height substantially less than the height of said firebox with an upper surface inclined downwardly toward the center of said horizontal portion whereby said downwardly inclined surfaces on said rear and side vertical portions will prevent collection of burnt materials thereon.

4,285,328

AGRICULTURAL WASTE BURNING HEATER AND HEATING METHOD

William J. Fritz, 1672 16th Ave.; James A. Fritz, 4023 E. 8th, and Lawrence D. Fritz, R.R. 5, Box 27AB, all of Columbus, Nebr. 68601

Filed Feb. 28, 1979, Ser. No. 16,279
Int. Cl.³ F23G 7/00
U.S. Cl. 126—225 **20 Claims**



1. An agricultural waste burning heater, comprising:

a generally vertically disposed agricultural waste combustion chamber having an opening at the bottom thereof, and an openable and closable access means at the top thereof for the addition of agricultural waste to said combustion chamber, a generally cylindrical upper portion, and a generally conical lower portion, said conical lower portion tapering downwardly toward said bottom opening with the interior of said conical lower portion being lined with firebrick;

means for supporting the waste in said combustion chamber while permitting gas flow through said combustion chamber;

an exhaust system connected to said bottom opening, said exhaust system including an exhaust outlet and a filtration means between said bottom opening of said combustion chamber and said exhaust outlet for removing solid products of combustion;

air intake means in the upper part of said combustion chamber for permitting air flow into said combustion chamber; and,

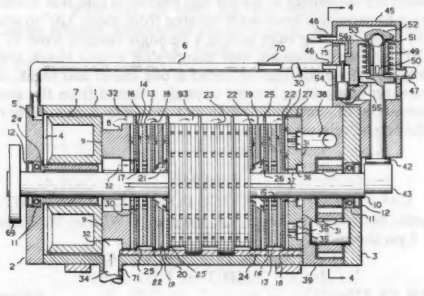
gas flow means for creating a downward draft in said combustion chamber which exits said combustion chamber at said bottom opening and passes through said exhaust system to said exhaust outlet whereby agricultural waste burned in said combustion chamber while being subjected to the downward draft is almost completely combusted producing a stream of hot gases which is usable for heating purposes upon leaving said exhaust outlet.

4,285,329

FRICTION HEAT GENERATOR

George A. Moline, 8 Glenwood Dr., Ballston Lake, N.Y. 12019

Filed Dec. 26, 1978, Ser. No. 973,005
Int. Cl.³ F24C 9/00
U.S. Cl. 126—247 **45 Claims**



1. A friction heat generator, comprising:

a casing, with end walls and with a side wall;

a drive shaft for receiving power input, rotatably mounted in the end walls of the casing;

at least one rotatable disc assembly, coaxially mounted on the drive shaft, and keyed to rotate with the drive shaft while being free to slide axially along the drive shaft;

at least one stationary disc assembly, mounted on the side wall, adjacent to one side of and in frictional contact with the rotatable disc assembly, keyed to remain rotationally stationary with respect to the side wall while being free to slide axially along the drive shaft, and surrounding but not keyed to the drive shaft; and

means responsive to the generator's driving power input for urging the rotatable disc assembly and the stationary disc assembly closer together as the driving power increases.

4,285,330

CONCENTRATING SOLAR COLLECTOR

Wayne A. Shook, Rte. 2, Box 34, Marissa, Ill. 62257

Filed Dec. 13, 1979, Ser. No. 103,377
Int. Cl.³ F24J 3/02
U.S. Cl. 126—425 **1 Claim**

1. A concentrating solar collector for use in heating liquid, comprising

a plurality of elongated side-adjacent sunlight reflectors, each having a cross-sectional portion defining a portion of a parabola, each reflector having a line of focus,

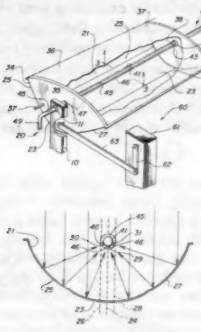
tracking means to so position the reflectors relative to the

sun that the sunlight incident on each reflector is reflected to its line of focus, and

a tubular liquid-conducting absorber mounted with its outer surface substantially along the line of focus of the elongated reflector, the absorber being surrounded by a substantially translucent, substantially evacuated tubular cover, the absorber characterized by having

thermal conductivity not less than that of aluminum, and an outer surface which generally has a coefficient of emittance for thermal radiation of not more than four-tenths that of a perfect blackbody, interrupted by

a plurality of elongated parallel spaced-apart stripe-like areas extending longitudinally along its outer surface, one at the line of focus of each reflector, the stripe-like areas having



a coefficient of absorptance not less than eight-tenths that of a perfect blackbody,

whereby to minimize emittance of thermal radiation from the absorber without a corresponding decrease in absorptance of sunlight wherein the combined surface areas of said plurality of elongated stripe-like areas of the absorber outer surface together do not exceed one-third of the total outer surface area of the absorber, the elongated stripe-like areas of the absorber outer surface having a selective absorbing coating having a ratio of absorptance for sunlight to emittance for thermal radiation of not less than five, and wherein the reflective surfaces of the plurality of elongated side-adjacent sunlight reflectors are together formed of a single sheet of reflecting material.

4,285,331

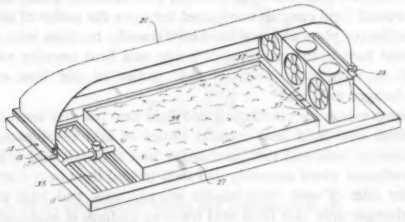
SOLAR HEATER

Dan E. Bloxsom, 22 E. Shady La., Houston, Tex. 77042

Filed Nov. 13, 1978, Ser. No. 959,993

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—428 **10 Claims**



1. Solar heater for a structure having a roof and a ceiling extending beneath such roof, comprising an arched panel mounted in an opening in such roof, said panel being transparent to solar radiation and including an air inlet means, a heat exchanger disposed on and supported by such ceiling, said heat exchanger including means for absorbing heat from such solar radiation and being adjacent and spaced from the panel, solar powered means disposed on and supported by such ceiling under said panel in a location to receive some of such solar radiation for moving air over the heat exchanger in the space between said panel and said heat exchanger to absorb heat from said heat exchanger, and a register disposed in an opening in such ceiling movable between an open position in which air is allowed to pass from said solar heater through such ceiling and a closed position in which air is prevented from passing from said solar heater through such ceiling.

4,285,332

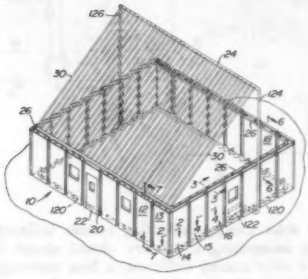
BUILDING HAVING SOLAR HEATING SYSTEM

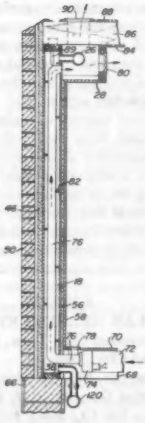
Thomas McHugh, 373 NW. 4th Diagonal, Boca Raton, Fla. 33432

Filed Jul. 9, 1979, Ser. No. 55,737

Int. Cl.³ F24J *3/02*; F24D *5/10*

U.S. Cl. 126—429 **6 Claims**





1. A building having a solar heating system integrated in the architecture thereof comprising at least one outer perimeter side wall of the building being defined by hollow load bearing vessels, insulation on opposite major faces of said vessels, each vessel having a width substantially greater than its depth, at least one solar heating panel, said panel being inclined so as to have an upper end and a lower end mounted on a roof of the building; a first manifold at said panel upper end on the roof, a second manifold at said panel lower end, said panel including plural pipes extending between said manifolds, said second manifold communicating with the upper end of said vessels for delivering a heated fluid thereto, a third manifold communicat-

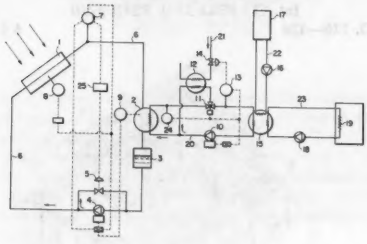
ing with the lower end of said vessels, means for circulating a fluid directly from said third manifold to said first manifold without passing through a heat exchanger reservoir, and an air circulating duct in heat exchange relationship with at least one of said vessels, at least one end of said duct communicating with a room of said building adjacent said perimeter side wall.

4,285,333

SOLAR ENERGY COLLECTING SYSTEM

Yasuo Tanaka; Kenji Shimokawa, and Muneshige Nagatomo, all of Tokyo, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 14, 1979, Ser. No. 20,583
Claims priority, application Japan, Aug. 3, 1978, 53/94158
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **14 Claims**



1. A solar energy collecting system utilizing latent heat transfer, comprising a primary closed circuit including, in series, a solar energy collector, a heat exchanger, a carrier receiver tank and a first circulating pump for circulating a heat carrier through said primary closed circuit, said carrier capable of evaporating at a low temperature under a low pressure, and a first control means responsive to surface temperatures of said solar energy collector, the temperature of said heat carrier emanating from said collector and a pressure in said heat exchanger and being operable to output a control signal to control the operation of said pump and the flow of fluid through a bypass circuit connected across said pump by opening and closing a control valve thereof to maintain the temperature of said carrier emanating from said collector at substantially a constant value, a secondary closed circuit including, in series, said heat exchanger, a utilization means, a second circulating pump for circulating water through said secondary circuit and a second control means responsive to the temperature of said water in said secondary circuit to maintain the temperature thereof at substantially a constant value.

4,285,334

SOLAR HEATING SYSTEM

Denver G. Collins, Ashland City, Tenn., assignor to State Industries, Inc., Ashland City, Tenn.

Continuation of Ser. No. 877,324, Feb. 13, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,585
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—437 **3 Claims**

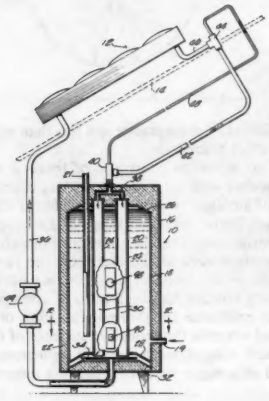
1. A solar heating system for heating water comprising:

a solar collector panel assembly positioned to receive rays from the sun, said panel including a collector plate assembly adapted to receive the sun's rays on a surface thereof and to convert such rays into heat energy, said collector plate assembly having an inlet and outlet and a flow passageway means therebetween;

a fluid heat transfer medium for the system which when circulated through said passageway means in said collector plate will absorb heat energy produced by the sun's rays;

a combination storage tank and heat exchanger unit located at an elevation lower than that of said collector panel, said unit adapted to accommodate the flow of said heat transfer medium therethrough and to transfer heat from such transfer medium into the water to be heated, said heat transfer unit comprised of a storage tank and a plurality of vertically extending heat exchanger tubes mounted inside and sealed from said storage tank, said vertically extending heat exchanger tubes forming a plurality of vertically disposed cylindrical chambers, a fluid heat transfer medium inlet for said combination storage tank and heat exchanger unit communicating with the top ends of said vertically extending heat exchanger tubes and a fluid heat transfer medium outlet for said combinaton storage tank and heat exchanger unit communicating with the bottom ends of said vertically extending heat exchanger tubes;

conduit means for establishing fluid connection between said collector plate of said solar collector panel and said combination storage tank and heat exchanger unit, said conduit means including first and second fluid conduits, said first fluid conduit connected between said fluid heat transfer medium outlet of said heat exchanger unit and the inlet



to said collector plate to carry said heat transfer medium from said heat exchanger unit to said collector plate, said second fluid conduit connected between the outlet of said collector plate and said fluid heat transfer medium inlet of said heat exchanger unit to carry said heat transfer medium from said collector plate outlet to said heat exchanger unit; and

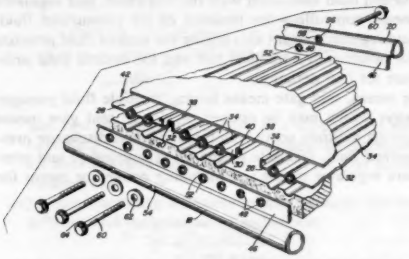
a pump means for circulating said fluid heat transfer medium from said fluid heat transfer outlet of said combination storage tank and heat exchanger unit through said solar collector panel assembly and then to said fluid heat transfer inlet of said combination storage tank and heat exchanger unit, said fluid heat transfer medium in said vertically disposed cylindrical chambers is maintained at a level intermediate said fluid outlet and fluid inlet when said pump means is running so that the fluid heat transfer medium flowing through the upper portions of said vertically disposed cylindrical chambers above said level will cascade downwardly along the exposed inner surfaces of said cylindrical chambers.

4,285,335

SOLAR ENERGY COLLECTOR PANEL

William B. Simmons, Sr., Geneva, and Derrick S. Ellis, Hartford, both of Ala., assignors to Relisble Metal Products, Inc., Geneva, Ala.

Filed Jul. 30, 1979, Ser. No. 62,053
Int. Cl.[3] F24J 3/02; F28F 9/02
U.S. Cl. 126—447 8 Claims



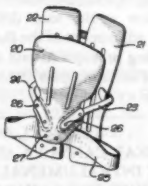
1. An elongated solar energy collector panel assembly including an elongated extruded metal planar panel section means for absorbing solar energy defining a plurality of individual, laterally spaced and open ended fluid flow tubular portions extending longitudinally along and opening endwise outwardly of opposite ends of said panel section with portions of said panel section extending between and interconnecting adjacent tubular portions of said panel section, elongated fluid inlet and outlet manifolds extending transversely of and across the opposite ends of said panel section, said inlet and outlet manifolds including openings therein spaced longitudinally therealong and opening into the corresponding opposite ends of said tubular portions with said manifolds sealed relative to the ends of said tubular portions, each of the opposite ends of said tubular portions including reduced internal width defining remote side portions, gasket means disposed between the opposite ends of said tubular portions and said manifolds, said gasket means comprising a one-piece member extending substantially the length of said manifolds and a plurality of attaching bolts secured transversely and passing entirely through each of said manifolds at points spaced longitudinally therealong and threadedly engaged with the inner portions of the remote side portions of said tubular portions.

4,285,336

SCOLIOSIS ORTHOTIC SYSTEM

Alfred L. Oebser, Orange, and David L. Porter, Sunset Beach, both of Calif., assignors to Orthomedics, Inc., Brea, Calif.

Filed Oct. 23, 1979, Ser. No. 87,541
Int. Cl.[3] A61F 5/02
U.S. Cl. 128—78 8 Claims



1. In an orthopedic brace, the combination of:
a stiff anterior panel;
right and left spaced stiff posterior panels;
right and left elongated substantially rigid iliac crest members, with said right member fixed to said anterior and right panels and with said left member fixed to said anterior and left panels, with said crest members shaped such that they fit around the torso and over the iliac crest of a person when the brace is worn;
adjustable strap means interconnecting said right and left panels; and
a flexible pelvic band carried adjacent the lower ends of said panels below said crest members and extending from said right posterior panel to said anterior panel to said left posterior panel and fitting around the pelvis of a person when the brace is worn;
with said stiff anterior and posterior panels, strap means and substantially rigid crest members providing a pre-determined distance between said anterior panel and said posterior panels and between a persons abdomen and back when the brace is worn.

4,285,337

SURGICAL ARM-SLING WITH IMPROVED STRAP ADJUSTMENT

Salvatore Cosentino, P.O. Box 488, Woodridge, N.Y. 12789

Filed Aug. 2, 1979, Ser. No. 63,391
Int. Cl.[3] A61F 13/00
U.S. Cl. 128—133 6 Claims

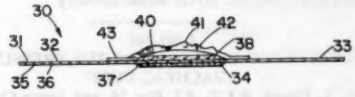
1. A surgical arm sling comprising a body of trough-like configuration, said body comprising inside and outside walls, means to join said walls to each other at one end of said body to form an elbow pocket, a strap, means to join one end of said strap to said body at said elbow pocket end thereof, composite fastener means comprising ring means to secure said strap at any one of an infinite number of adjusted strap lengths, and said composite fastener means also comprising snap means to permit repeated opening and closing of said sling without disturbing said one adjusted strap length, said strap consisting of elastic material, said snap means comprising a pair of mating snaps secured one to each of said inside and outside body walls at the corners thereof opposite said elbow pocket end, said ring means comprising a pair of rings cooperable with the one end of said strap to infinitely adjust the length of said strap, a loop of the same strap material through said rings to secure said rings to the inside body wall corner, and the ends of said loop being at least partially secured thereto by said snap means at said corner.

4,285,338

ADHESIVE BANDAGE

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Oct. 1, 1979, Ser. No. 80,565
Int. Cl.[3] A61F 13/00
U.S. Cl. 128—155 10 Claims



1. An adhesive bandage comprising in combination:
an elongated thin strip of flexible bandage material containing end portions for engagement with the skin of a person using said bandage and adhesive material coating the

inside surfaces of said end portions for adhering said end portions to portions of the skin,

a central portion of said bandage containing soft material and void of such adhesive, and

a protecting member made of a molded plastic resinous material, said protecting member being more rigid in structure than said thin strip of flexible material and having an irregular external surface, said protecting member defining the outer wall of the central portion of said bandage and protruding outwardly from said central portion of said elongated flexible thin strip, said protecting member being integrally bonded to the outer surface of said elongated thin strip intermediate the ends thereof, said protecting member serving as a cover and shock absorbing means for protecting the wound covered by the central portion of the bandage.

4,285,339

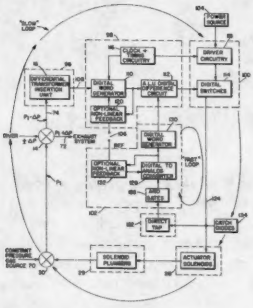
ELECTRONIC CLOSED LOOP SERVOMECHANISM AND ELECTRONIC SCUBA REGULATOR THEREFOR

Robert T. McIntyre, 10706 Orchard St., Fairfax, Va. 22030

Continuation-in-part of Ser. No. 60,818, Jul. 25, 1979, abandoned. This application Sep. 12, 1979, Ser. No. 74,711

Int. Cl.[3] A62B *7/04*

U.S. Cl. 128—204.23 **16 Claims**



1. A breathing gas system having a demand regulator and valve means for delivery of breathable gas to a recipient on demand including: means electronically sensing pneumatic demand created by the recipient and converting said demand into an electrical output signal; electronic processing means for converting said electrical signal into a first digital word address; electronic driver means for opening and closing said valve means to deliver breathable gas at ambient pressure to the recipient on demand and controlled by said first digital word address; and means for preventing runaway gas blast instability which would otherwise occur due to the response lag between the pneumatic and electronic components of the system, comprising electronic feedback means tapped into said electronic driver means for sensing the electronic driver means output and converting it into a second digital word address and logic means for interpreting said first and second digital word addresses and creating an output to further control said electronic driver means and thus said valve means to provide breathable gas at ambient pressure in response to recipient demand and electronic driver means delivery.

4,285,340

APPARATUS FOR CONTROLLING THE PRESSURE IN A TRACHEAL CUFF

Walter A. Gezari, R.F.D. #2, Box 76, and James Crittenden, 133 Parker Hill Rd., both of Killingworth, Conn. 06417

Filed Mar. 16, 1979, Ser. No. 21,072

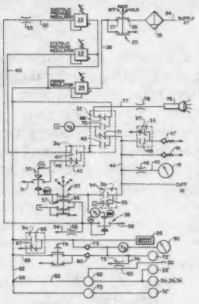
Int. Cl.[3] A61M *16/00*

U.S. Cl. 128—205.24 **24 Claims**

1. Apparatus for regulating the fluid pressure within a conventional tracheal cuff, so as to inflate or deflate the cuff, coupled to a conventional automatic respirator which has inhalation and exhalation cycles, the respirator having associated therewith a source of pressurized fluid, the respirator providing a rapid pressure increase which is coordinated with the onset of inhalation, the regulating apparatus comprising;

adjustable pressure regulator means, said regulator means adapted to be in communication with the source of pressurized fluid associated with the respirator, said regulator means controlling the pressure of the pressurized fluid, said regulator means also setting the desired fluid pressure for inflation of a tracheal cuff and the desired fluid pressure for cuff deflation;

gate means, said gate means having multiple fluid passageways which may be opened or closed, said gate means having multiple ports which receive and discharge pressurized fluid, said gate means being coupled to said pressure regulator means and including connector means for



coupling said gate means to a tracheal cuff associated with a respirator whereby said gate means may place said adjustable pressure regulator means in communication with the cuff when the respirator is in the inhalation cycle;

gate control means, said gate control means including connector means whereby said gate means may be coupled to the respirator, said gate control means controlling the opening and closing of said passageways of said gate means in response to the cycling of the respirator, said gate control means being in communication with said adjustable pressure regulator means; and

cuff deflator control means, said deflator control means being in communication with said adjustable pressure regulator means, said deflator control means including connector means whereby said deflator control means may be placed in communication with the cuff through an open passageway of said gate means when the respirator is in the exhalation cycle, said deflator control means thereby causing adjustment of the fluid pressure in the cuff from said inflating pressure to said deflating pressure and maintaining said deflating pressure when the respirator is in the exhalation cycle.

4,285,341

EXTRACORPOREAL CANNULA APPARATUS WITH RETRACTABLE INTRALUMENAL BALLOON AND METHOD FOR USING SAME

Charles N. Pollack, 12311 Windsor Dr., Carmel, Ind. 46032

Continuation-in-part of Ser. No. 962,909, Nov. 22, 1978, which is a continuation-in-part of Ser. No. 796,362, May 12, 1977, Pat. No. 4,140,119. This application Sep. 24, 1979, Ser. No. 78,607

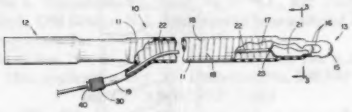
The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.

Int. Cl.[3] A61M *1/03, 25/00*

U.S. Cl. 128—214 R **24 Claims**

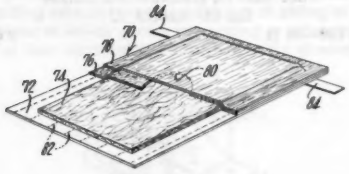
1. An extracorporeal cannula apparatus suitable for use in a cardiac cannulation, comprising:

(a) a first elongated and flexible tubular member having a proximal and a distal end, the proximal end being open, said first member including at least one first hole near the distal end thereof;
(b) a first inflatable balloon;
(c) means for positioning said first balloon in the lumen of



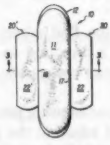
said first member adjacent the first hole therein and for occluding the lumen and for preventing the entrapment of air near the distal end thereof when said first balloon is inflated; and
(d) means, including a flexible tubular member, for readily inflating and deflating said first balloon.

4,285,342
DISPOSABLE DIAPER
Frederick K. Mesek, Tinley Park, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.
Filed Jun. 4, 1979, Ser. No. 45,030
Int. Cl.³ A41B *13/02*
U.S. Cl. 128—287 **8 Claims**



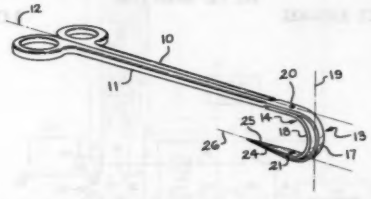
1. A disposable diaper comprising a first outer layer in the form of a moisture-impervious backing sheet; an absorbent batt positioned in superposed relationship with respect to the backing sheet, the batt being smaller than the backing sheet and spaced inwardly from the longitudinal sides thereof; and a second outer layer in the form of a liquid barrier positioned in superposed relationship with respect to the batt on the side opposite the backing sheet, the liquid barrier being larger than the batt and substantially coterminous with the backing sheet and having longitudinal side margins thereof secured to the backing sheet and having a single opening situated so as to contact the perineal region of the wearer, the opening and the liquid barrier being covered by a facing layer on the side opposite the batt.

4,285,343
SANITARY NAPKIN
Rosetta M. McNair, 3013 Guinevere Dr., Chesapeake, Va. 23323
Filed Oct. 16, 1979, Ser. No. 85,423
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—287 **3 Claims**



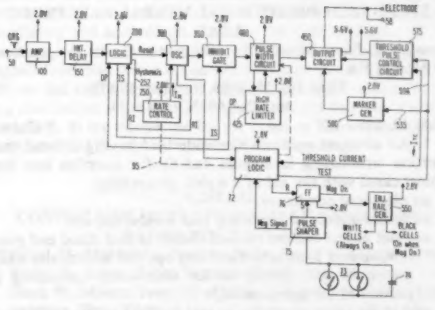
1. An improved sanitary napkin comprising an elongated central absorptive means with side panel means extending laterally from each longitudinal edge of said central means with a flexible line of juncture therebetween, each said side panel being of a width at least half the width of said central element, a fluid-impervious backing for said central means and for each of said side panels with means on each backing to secure said napkin to an undergarment, said central means being secured to the inner surface of the crotch portion of said undergarment, each side panel being folded over to encompass at least half of the outer surface of said crotch portion to which it is secured, the so-positioned napkin maintaining its longitudinal position and its lateral width as the crotch portion of the undergarment conforms to the body of the wearer.

4,285,344
SURGICAL SCISSORS
Warren S. Marshall, 1025 Secor Rd., Toledo, Ohio 43607
Filed Feb. 21, 1980, Ser. No. 123,111
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—318 **3 Claims**



1. A pair of surgical scissors comprising two handle members extending along a first axis and each having a hook-shaped end carrying a cutting edge, and two aligned pivots pivotally connecting the hook-shaped ends, the cutting edges cooperating to form two blades for cutting in a plane which is generally perpendicular to the first axis.

4,285,345
MONOLITHIC PACEMAKER UTILIZING I^2L CIRCUITRY
Kornelis A. Mensink, Voorst, and Hendrik L. Brouwer, Leeuwarden, both of Netherlands, assignors to Vitatron Medical B.V., Dieren, Netherlands
Filed Jul. 2, 1979, Ser. No. 54,019
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **23 Claims**



1. A pacemaker having means for providing stimulas pulses,

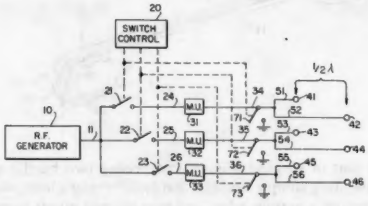
and means for adjusting the rate of delivery of said stimulus pulses to one of a plurality of operating rates, characterized by comprising a controllable current generator and a current controlled oscillator, the oscillator having means for generating stimulus timing signals and connected to said current generator to operate at a rate determined by the current provided by said current generator, means for controlling said current generator to provide a control current at one of a predetermined plurality of levels, said oscillator having current responsive means for establishing the rate of said timing signals and multiple collector transistors in current mirror configuration, and a connecting circuit connecting said current generator to said oscillator so that said control current controls the current of said current responsive means, thereby controlling the rate of said stimulus pulses.

4,285,346

ELECTRODE SYSTEM

David Armitage, Bangor, Wales, assignor to Harry V. LeVeen, Charleston, S.C.

Filed Mar. 14, 1979, Ser. No. 20,355
Int. Cl.³ A61N *1/40*
U.S. Cl. 128—422 **8 Claims**



1. An apparatus for developing a radio frequency voltage between a pair of electrodes whereby a radio frequency electro-magnetic field can be applied to a load between said electrodes comprising generator means for generating radio frequency electrical energy having an output at which a voltage varying at a radio frequency is present, a pair of applicator electrodes, a first electrical line connected at one end thereof to one of said electrodes, a second electrical line connected at one end thereof to the other of said electrodes, said first and second lines being connected at the other ends thereof commonly to said output, and said first line having a length which is an odd number of half wave lengths at said radio frequency longer than said second line.

4,285,347

STABILIZED DIRECTIONAL NEURAL ELECTRODE LEAD

Stanley R. Hess, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jul. 25, 1979, Ser. No. 60,577
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **8 Claims**

1. An elongate epidural electrode lead having a distal end portion terminating in a distal end tip for insertion into the spinal canal with the aid of a stylet, comprising:

an electrical conductor,

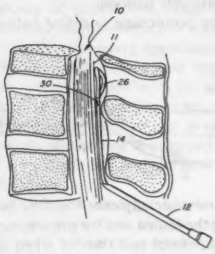
an insulating sheath covering said conductor, and

contact means located on said sheath in said distal end portion, spaced from said distal end tip, and electrically connected to said conductor for electrically contacting a portion of the spinal canal,

said stylet being insertable in said lead for guiding said lead to its proper position in the spinal canal and removable thereafter,

wherein the improvement comprises:

said lead distal end portion including a resilient portion between said contact means and said distal end tip, and laterally extending when said stylet is not inserted in said lead and substantially nonextending when said stylet is



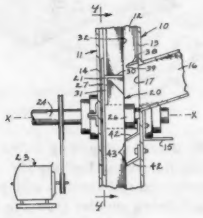
inserted in said lead, whereby said lead may be inserted into the spinal canal with said stylet inserted, and said laterally extending portion may maintain said distal end portion in position after said stylet is withdrawn.

4,285,348

THRESHING MACHINE

Orville A. Vogel, Pullman, Wash., assignor to Hartman L. Gearhiser, Pullman, Wash.

Filed Mar. 14, 1980, Ser. No. 130,554
Int. Cl.³ A24C *1/32*
U.S. Cl. 130—30 H **9 Claims**



1. A threshing machine, comprising:

a frame;

a hollow circular housing mounted to the frame and formed on a horizontal axis having an upright front side and an axially spaced back side;

a feed chute leading axially to an opening formed through the front side of the housing to one side of the horizontal housing axis;

a shaft mounted to the housing for rotation about the horizontal axis;

a flail wheel mounted to the shaft within the housing for rotation in a circular path therein about the horizontal axis and having a flail arm extending radially outwardly from the housing axis by a distance greater than the distance from the axis to the chute opening;

said flail arm having a radially extending threshing surface thereon;

means for rotating the flail wheel on the shaft about the horizontal axis in a direction so the flail arm will move downwardly in an arcuate path past the chute opening; and

baffle means within the housing immediately above the feed chute opening and adjacent the path of the flail arm for producing an inward motion of air entering the housing through the chute opening as the flail arm moves in the arcuate path past the chute opening.

4,285,349

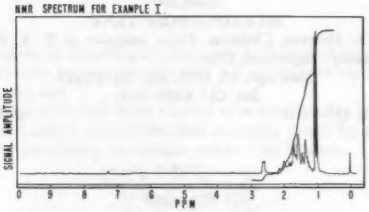
USE OF CERTAIN BRIDGED KETONES IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF SMOKING TOBACCO

Mark A. Sprecker, Sea Bright; James M. Sanders, Eatontown; William L. Schreiber, Jackson; Hugh Watkins, Lincroft; Joaquin F. Vinals, Red Bank, all of N.J.; Edward J. Shuster, Brooklyn, N.Y.; Thomas J. O'Rourke, Red Bank, N.J.; Myrna L. Hagedorn, Highland Park, N.J., and Philip Klemarczyk, Old Bridge, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

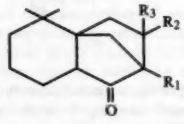
Division of Ser. No. 95,149, Nov. 16, 1979, Pat. No. 4,250,338. This application Oct. 23, 1980, Ser. No. 200,045

Int. Cl.³ A24B *3/12, 15/30*

U.S. Cl. 131—276 3 Claims



1. A process for augmenting or enhancing the aroma or taste of a smoking tobacco comprising the step of adding to a smoking tobacco an aroma or taste augmenting or enhancing quantity of at least one tricyclic ketone having the structure:



wherein R_1, R_2 and R_3 are the same or different and each represents hydrogen or C_1–C_3 lower alkyl.

4,285,350

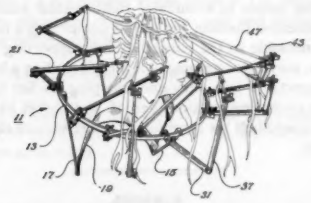
HAIRSTYLING AID

Ginger C. Cox, 4204 Cherokee Trail, Fort Worth, Tex. 76133, and Sandra F. Scott, 4945 Penrose, Fort Worth, Tex. 76116

Filed Mar. 31, 1980, Ser. No. 135,360

Int. Cl.³ A45D *1/00*

U.S. Cl. 132—9 10 Claims



1. An apparatus for use in hairstyling, comprising:
a rigid loop;
support means for supporting the loop around the head of a user;
a plurality of arms having one free end and one end secured to the loop;
a clip secured to the free end of each of the arms for retaining a strand of the user's hair; and
positioning means for allowing the free ends of the arms to be moved in space, and for retaining the positions of the arms until subsequently moved, to retain strands of hair at different points.

4,285,351

MONITORING DEVICE FOR THE COIN CONTAINER OF A COIN COLLECTING MECHANISM

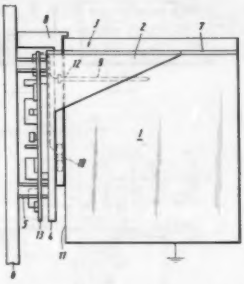
Alfred Nyffenegger, Uetendorf, Switzerland, assignor to Autelca AG, Gumligen, Switzerland

Filed Jun. 20, 1979, Ser. No. 50,154

Claims priority, application Switzerland, Jul. 12, 1978, 7577/78

Int. Cl.³ G07D *9/00*

U.S. Cl. 133—1 R 11 Claims



1. A monitoring device for the coin container of a coin collecting mechanism, comprising a coin container which is metallic and is exchangeable, contact means (1, 9), between which the coins collected in the container (1) are adapted to establish a connection at a specific filling height, a first oscillator circuit (17), coupling means (14) coupling said contact means (1, 9) in such a way to said first oscillator circuit (17) that the latter (17) is oscillating or not oscillating depending on whether the contact means (1, 9) are connected in circuit by the coins, a first signal circuit (26, 32) connected to said first oscillator circuit to emit a first signal which indicates whether the first oscillator circuit (17) is oscillating and accordingly whether the contact means (1, 9) are connected by the coins, a second oscillator circuit (37), a self-induction coil (10) connected to said second oscillator circuit (37), said coil (10) so arranged that one of the walls (11) of the coin container (1) is adapted to extend through the coil field and to influence the coil field in such a way that said second oscillator circuit (37) is oscillating or not oscillating depending on whether the coin container (1) is present, a second signal circuit (38, 39) connected to said second oscillator circuit to emit a second signal which indicates whether the second oscillator or circuit (37) is oscillating and accordingly whether the coin container (1) is present, and a logic circuit, to which said first and second signals from said first and said second signal circuit (26, 32; 38, 39) are fed and which emits a signal blocking the coin collecting mechanism when the first signal indicates that the contact means (1, 9) are connected by the coins or the second signal indicates that the coin container (1) is not present.

4,285,352

CONTINUOUS DUTY CHEMICALLY SANITIZING BATCH RINSE SYSTEM

William H. McMahon, Ludlow Falls; Louis F. Fraula, Troy; Stuart E. Athey, Troy; Thomas M. Johnson, Troy, and Terrence W. Moore, Troy, all of Ohio, assignors to Hobart Corporation, Troy, Ohio

Filed Sep. 12, 1979, Ser. No. 74,649

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—48 11 Claims

1. In a warewashing machine having a rinse station for

supporting food ware items, a chemically sanitizing batch rinse system, comprising:

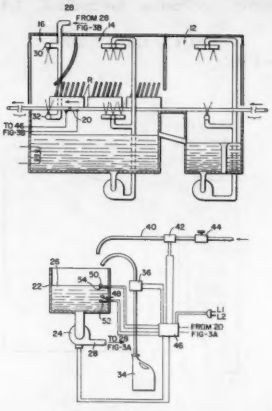
(a) a rinse solution mixing tank;

(b) a rinse pump and spray system connected for pumping rinse solution from said mixing tank, on demand, and spraying the solution onto foodware items at the rinse station;

(c) a source of chemical sanitizing agent;

(d) a source of fresh water; and

(e) means operable to deliver sanitizing agent and fresh water into said mixing tank in predetermined proportions



and at a rate greater than that at which the solution is pumped from the tank and in response to the solution level in said tank falling below a first lower level and operable to discontinue delivery of water and sanitizing agent when the solution level in said tank reaches a second higher upper level,

(f) whereby a new batch of chemically sanitizing rinse solution is prepared each time the solution level in said mixing tank falls below said lower level and the size of each new batch prepared is dependent on the volume of solution pumped from said tank but is of substantially constant proportion of sanitizing agent and water.

4,285,353

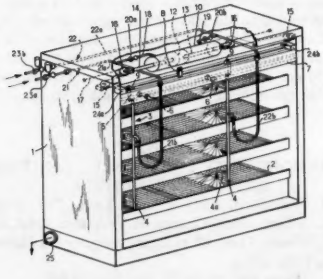
FILTER WITH AUTOMATIC CLEANING

Pierre Colomer, Chatenay-Malabry, France, assignor to Interfiltre S.A., Livarot, France

Filed Sep. 14, 1979, Ser. No. 75,791

Int. Cl.³ B01D *41/00, 25/12*

U.S. Cl. 134—181 **18 Claims**



1. A system for automatic cleaning of filter panels supported by a frame comprising means for sprinkling a cleaning liquid upon the filter panels including at least one sprinkling tube having at least one outlet nozzle directed toward at least one filter panel, carriage means joined to said sprinkling means and movably mounted to said frame for movement thereon to move said sprinkling means and said outlet nozzle with respect to said filter panel, fluid driven hydraulic motor means for moving said carriage means on said frame, transmission means interconnecting said hydraulic motor means and said carriage means to transmit movement of said hydraulic motor means to said carriage means, fluid inlet means for supplying said cleaning fluid to said sprinkling tube and offtake means communicating with said fluid inlet means and said hydraulic motor means to divert a predetermined flow of said cleaning fluid to said hydraulic motor means to power said hydraulic motor means.

4,285,354

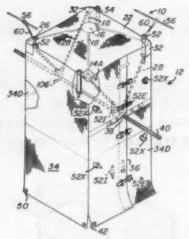
MULTIPURPOSE TENT

Allan E. Beavers, Littleton, Colo., assignor to T. A. Pelsue Company, Englewood, Colo.

Filed Apr. 17, 1979, Ser. No. 31,017

Int. Cl.³ A45F *1/00*

U.S. Cl. 135—1 R **2 Claims**



1. The tent comprising: a rectangular roof panel and four rectangular side panels hanging from the edges of the roof panel and cooperating therewith and with one another to define an open-bottomed box-like canopy, one opposed pair of said side panels being vertically slit intermediate the side margins thereof to free openable flaps arranged in side-by-side relation, and each side panel of the remaining pair thereof cooperating with the adjacent flaps to produce an elevatable curtain; a rigid subframe including connecting means located on the inside of the canopy at the juncture between adjacent side panels and the roof panel, a hub member positioned on the underside of the roof panel at the center thereof, struts radiating diagonally from the hub to points of attachment with the connecting means, and upright cornerposts connected to the connecting means in essentially right-angular relation to the struts connected thereto; and means comprising a base detachably connectable to the cornerposts in supporting relation to the latter, said base comprising a sling including a belt detachably connectable to a personnel-carrying bucket of a cherry picker in encircling relation thereof, and socket like elements carried by said belt for receiving the free ends of the connecting means.

4,285,355

TENT

Gene D. Lundblade, Valley Center, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

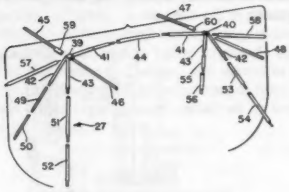
Filed Oct. 31, 1979, Ser. No. 89,960

Int. Cl.³ A45F *1/16*

U.S. Cl. 135—4 R **15 Claims**

1. A tent assembly comprising a frame assembly and a cover, the cover forming a tent enclosure and having a top and a bottom, the frame assembly comprising:

(a) a pair of brackets, each of the brackets adapted to be removably connected to the top of the cover,
(b) an elongated flexible ridge pole adapted to be connected to each of the brackets to maintain the brackets in a spaced-apart condition and to maintain the ridge pole bowed upwardly,



(c) means for attaching the ridge pole to the top of the cover whereby the bowed ridge pole will support the top of the cover, and
(d) a pair of upright poles adapted to be connected to each of the brackets, each of brackets including means for pivotally connecting the upright poles to the bracket.

4,285,356

METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Thomas R. Sifferman, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Oct. 12, 1979, Ser. No. 84,334
Int. Cl.³ F17D *1/17*
U.S. Cl. 137—13 **13 Claims**

1. In the method of transporting a viscous hydrocarbon through a pipe, the improvement which comprises forming an oil-in-water emulsion of lower viscosity to facilitate transporting said hydrocarbon through said pipe by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution containing an effective amount, in the range of about 125 to about 2,000 parts per million based on said hydrocarbon, of (a) about 40 to about 60 weight percent of an anionic alkyl polyether ethoxylated sulfate and (b) about 60 to about 40 weight percent of an alcohol ether sulfate, said anionic alkyl polyether ethoxylated sulfate being represented by the formula

$$R(OCHCH_2)_a(OCH_2CH_2)_bOSO_3M$$
$$\quad\quad|$$
$$\quad\quad CH_3$$

wherein R is a C_8 to C_{14} alkyl group, a is a number in the range of 2 to about 13, b is a number in the range of 1 to about 3, and M is sodium, potassium or ammonium, and said alcohol ether sulfate being represented by the formula

$$[CH_3(CH_2)_xCH_2(OCH_2CH_2)_nOSO_3]M$$

wherein x is an integer in the range of about 10 to about 16, n is a number in the range of 3 to about 12, and M is sodium, potassium or ammonium.

4,285,357

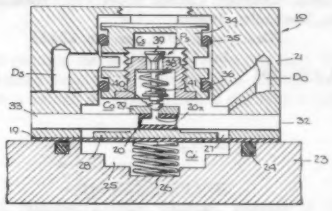
PNEUMATIC RELAY

Richard A. Jones, Bryn Mawr, Pa., assignor to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 16, 1980, Ser. No. 112,706
Int. Cl.³ G05D *16/00*; F16K *31/365*
U.S. Cl. 137—85 **3 Claims**

1. A pneumatic relay responsive to an air input signal whose pressure represents a variable to produce an air output signal proportional thereto, said relay comprising:

A. a structure defining an input chamber, an output chamber and a supply chamber;
B. an elastomeric diaphragm interposed between the input and output chambers, said structure being constituted by a meter body provided with a central bore which is secured to a plate having a well formed therein to define said input chamber, said diaphragm being sandwiched between said plate and said body, whereby said outer face seals said input chamber and said inner face seals the output chamber which is defined in said bore, said bore being internally divided to further define said supply chamber;
C. a supply port interposed between the output and supply chambers, said supply port having a valve seat and being operatively coupled to said diaphragm;
D. means to feed air from a constant pressure source to said supply chamber;
E. means to feed said input signal into said input chamber to deflect said diaphragm in one direction to cause said supply port to open to admit air from said supply chamber



into said output chamber until the pressure in the output chamber is in equilibrium with the pressure in the input chamber;
F. an exhaust port provided with a valve seat defined in the raised hub of a disc disposed centrally in said output chamber and bonded to the inner face of said diaphragm, said exhaust port valve seat being coupled by an open-ended elastomeric tube passing through a lateral passage in said hub to the atmosphere at opposing sides of the meter body, whereby when there is a change in input signal pressure resulting in an imbalance between said output pressure and the input pressure, the resultant diaphragm deflection in the reverse direction causes opening of the exhaust port to discharge air from the output chamber until equilibrium is restored;
G. a helical spring disposed in a well in said plate, the upper end of the spring engaging the inner face of the diaphragm to apply a bias to said disc; and
H. means to derive said output signal from said output chamber.

4,285,358

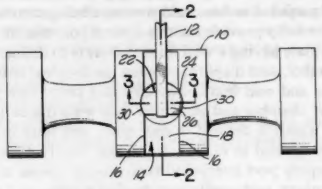
SERVOVALVE FEEDBACK WIRE INTERFACE CONFIGURATION

Richard J. Haydt, Los Angeles, Calif., assignor to Textron Inc., Providence, R.I.

Filed Jan. 14, 1980, Ser. No. 111,515
Int. Cl.³ F15B *13/16*
U.S. Cl. 137—85 **8 Claims**

1. In a servovalve having spool-valve-position feedback provided by a feedback spring in contact with a portion of the spool valve body, the improvement comprising:
a spool valve body having a slot therein, said slot having first and second side walls, said first and second side walls each having a recess therein, each said recess having an inner surface;
a feedback spring having a head insertable into said slot, said head having bearing surfaces which fit in face to face

relation with said inner surface of each of said recesses; and



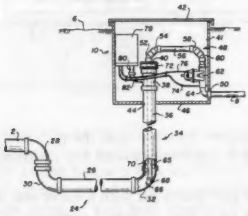
said slot being of sufficient depth to prevent contact between the feedback spring and the spool valve body.

4,285,359

INTERFACE UNIT FOR VACUUM SEWERS

Ian Doherty, Richmond, Canada, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Aug. 1, 1979, Ser. No. 62,653
Int. Cl.³ E03D *1/00*
U.S. Cl. 137—205 **18 Claims**



1. An interface unit for connecting an accumulation enclosure of a gravity feed conduit to a vacuum conduit comprising: means adapted to be placed adjacent to a surface level for defining a hollow chamber; an enclosure extension extending downwardly from said chamber defining means and having an upper end in the chamber and a lower end spaced below the chamber, the lower end of the enclosure extension adapted to be coupled to said accumulation enclosure in fluid communication therewith, the upper end of the enclosure extension being closed, whereby fluid pressure in the enclosure extension will increase as material is directed into the accumulation enclosure when the extension is coupled thereto; a vacuum conduit extension extending downwardly through the enclosure extension and having a lower open end near the lower end of the enclosure extension, the upper end of the vacuum conduit extension projecting outwardly from the enclosure extension; and means responsive to the fluid pressure in the enclosure extension for coupling the vacuum conduit extension with the vacuum conduit.

4,285,360

APPARATUS FOR WITHDRAWING THE OIL FROM AN INTERNAL COMBUSTION ENGINE

Johann G. H. Bauer, Hasbergen, Fed. Rep. of Germany, assignor to Robert K. Bauer, Mississauga, Canada

Filed Nov. 26, 1979, Ser. No. 97,155
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 7835250[U]; Sep. 22, 1979, 7926919[U]; Sep. 26, 1979, 7927321[U]
Int. Cl.³ F16N *33/00*; F01M *11/04*
U.S. Cl. 137—205 **20 Claims**

1. Apparatus for withdrawing a liquid from a container comprising:

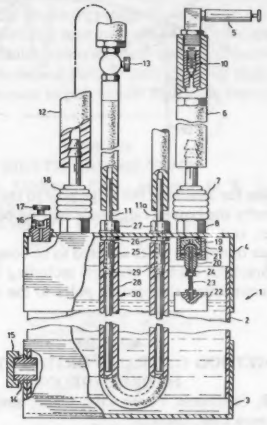
a rigid, fluid-tight receptacle;

vacuum line means for connecting said receptacle to a source of vacuum;

check valve means associated with said vacuum line for preventing backflow of gas therethough;

portable inlet probe means for insertion into said container to take up said liquid;

suction line means connecting said inlet probe means to said receptacle;



control valve means associated with said suction line means for selectively opening and closing said suction line means; and

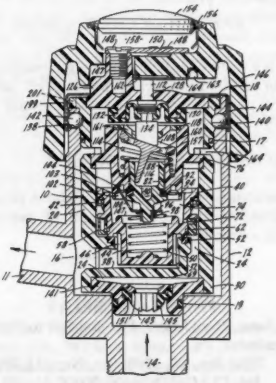
sheath forming means projecting into the interior of said receptacle without destroying the fluid-tightness thereof for receiving and storing said inlet probe means when not in use.

4,285,361

SLOW CLOSING FAUCET

Frederic Lissau, Chicago, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Aug. 3, 1978, Ser. No. 930,605
Int. Cl.³ F16K *25/00*
U.S. Cl. 137—454.6 **15 Claims**



1. In a slow-closing faucet having a hot and a cold water inlet and a mixed outlet, a casing, a removable control cartridge in said casing, said cartridge controlling the passage of

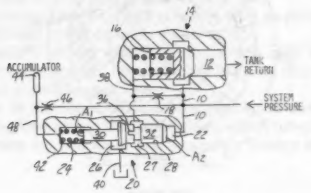
hot and cold water from said casing, an operating button on top of said casing connected to said cartridge, means in said cartridge responsive to the depression of said operating button for causing said cartridge to effect fluid flow from said hot and cold inlets to said outlet, means responsive to the rotation of said operating button for causing said cartridge to control the mixture of hot and cold water in accordance with the amount of rotation of said operating button, means in sid cartridge for causing the passage of water to be shut off in the event said operating button is held depressed unduly long, means in said cartridge for causing said mixing valve to slowly close after being opened to the passage of water, and means in said cartridge for causing a substantially constant rate of flow of mixed water from said outlet regardless of variations in water pressure from said hot and cold inlets.

4,285,362

POWER TRANSMISSION

Henry D. Taylor, Pontiac, Mich., assignor to Sperry Corporation, Troy, Mich.

Filed Feb. 4, 1980, Ser. No. 117,933
Int. Cl.³ F16K *31/383*
U.S. Cl. 137—489 **24 Claims**



1. A hydraulic pressure relief valve circuit comprising:
a. a source of system pressure and a return tank;
b. a main valve means operable to shut off fluid flow between said source of system pressure and said return tank;
c. bleed flow means connected to said source of system pressure and to said main valve means for restricting fluid flow to said main valve means;
d. pilot valve means for metering fluid flow restricted by said bleed flow means to said return tank, and having first and second ends, said first end connected to both said source of system pressure and said main valve means;
e. accumulator means connected to said source of system pressure and said second end of the pilot valve means for containing a volume of compressed fluid; and
f. damping means connected between said source of system pressure and said second end of the pilot valve means and said accumulator means for restricting fluid flow from said source of system pressure to both said pilot valve means and said accumulator means.

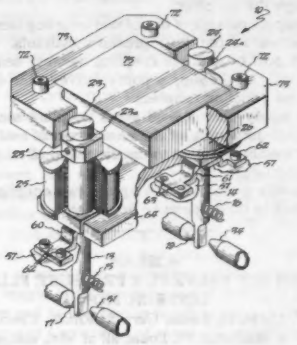
4,285,363

CONTROL VALVE CONSTRUCTION

Harvard B. Kolm, Lewiston, N.Y., assignor to Hydraulic Servocontrols Corporation, Buffalo, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,043
Int. Cl.³ F16K *11/10*
U.S. Cl. 137—596.17 **13 Claims**

1. A servovalve comprising a base, first and second flappers mounted on said base, armature means coupled to said first and second flappers, respectively, first and second nozzle means on said base for discharging fluid, third and fourth nozzle means for receiving fluid from said first and second nozzle means, respectively, means for normally biasing said first and second flappers into position for effectively preventing flow of fluid from said first and second nozzle means, respectively, and coil means operatively associated with said armature means for simultaneously causing said first flapper to move away from said first nozzle means while said second flapper remains in position for effectively preventing flow through said second nozzle means when current flow through said coil means is in a first direction, and for causing said second flapper to move away from said second nozzle means while said first flapper



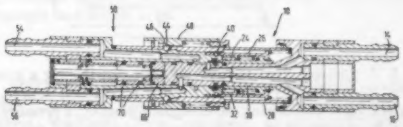
remains in position for effectively preventing flow through said first nozzle means when current flow through said coil means is in a second direction which is opposite to said first direction.

4,285,364

HOSE COUPLING

Michael J. Hawker, Lincoln, England, assignor to Clayton Dewandre Co. Ltd., Lincoln, England

Continuation of Ser. No. 966,209, Dec. 4, 1978, abandoned. This application May 21, 1980, Ser. No. 151,910
Int. Cl.³ F16L *37/28*
U.S. Cl. 137—614.03 **9 Claims**



1. A hose coupling for coupling and uncoupling between high pressure hydraulic system having a high pressure hydraulic source, and a hydraulic circuit that is pressure dependent upon the high pressure hydraulic source, said hose coupling comprising:
(a) a female coupling member including a tubular body open at one end and having a rigid axially-disposed spigot portion, supply and return passages in the spigot portion and leading to radial ports in the periphery thereof, and a sleeve sliding on the spigot portion and biased to a position to close the ports of said female coupling member;
(b) a complementary male coupling member adapted to enter the female coupling member, said male coupling member defining an axial bore which is adapted to receive with a sealed sliding fit the spigot portion of the female coupling member, the male coupling member also having supply and return passages leading to radial ports disposed radially inwardly toward the bore defined by said male coupling member and a plug or spool slidable in the bore and biased into a position to close the ports of said male coupling member;
(c) the female and male members being cooperative such that when the two members are coupled together the sleeve is displaced along the spigot portion of the female member to uncover the supply and return ports of said female member, and simultaneously the plug is displaced

along the bore of the male member to uncover the supply and return ports of said male member, with the supply and return ports of said female member cooperating with the corresponding ports of said male member in fluid communication to establish hydraulic flow and return paths through the coupling;

(d) the supply passage of one of said coupling members being connected to the high pressure hydraulic source, the return port of said one coupling member being disposed outwardly of the supply port relative to the distal end of said one coupling member;

(e) the supply port of said other coupling member being disposed outwardly of the return port of said other coupling member relative to the distal end of said other coupling member; and

(f) releasable means for locking the two coupling members together in their operative condition.

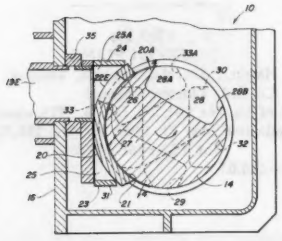
4,285,365
ROTARY VALVE FOR PRESSURE FLUID DISTRIBUTION

Graham C. Coats, St. Louis; Gary A. Elliott, Chesterfield, and Michael A. Bulboaca, St. Louis, all of Mo., assignors to Barry-Wehmiller Company, St. Louis, Mo.

Filed Aug. 23, 1979, Ser. No. 68,745

Int. Cl.³ F16K *11/02*

U.S. Cl. 137—625.15 **5 Claims**



1. A pressure fluid rotary valve for distributing a pressure fluid to a plurality of outlets from a common source, said rotary valve comprising: an elongated housing, a pressure fluid supply connected to said housing, a plurality of fluid outlet connectors spaced apart along the length of and opening outwardly from said housing, and means in said housing cooperating with said outlet connectors for controlling the distribution of the pressure fluid to said outlet connectors in a predetermined order and for establishing continuous flow of pressure fluid, said means including, a stator positioned in said housing adjacent said connectors and presenting to the interior of said housing a face surface which is a segment of a circle, said face surface being formed with a leading edge and a plurality of outlet ports spaced from said leading edge a uniform distance to provide a section of said face surface in advance of each of said outlet ports, means between said stator and said connectors forming separate spaces between said outlet ports and connectors such that each outlet port is in flow registration with a single connector, and an elongated valve body having a cylindrical form and rotatively mounted in said housing in position to make a working fit at said stator face surface, said valve body being formed with fluid flow controlling pockets spaced along the length thereof in position during body rotation to register with said outlet ports, the arrangement of said flow control pockets in said valve body being such as to assure the establishment of said continuous flow of pressure fluid and said predetermined order of distribution of the pressure fluid through said valve body pockets, the predetermined order assuring substantial freedom from bending of said valve body by the effect of the pressure fluid along the length thereof and simultaneous delivery of a series of fluid jets timed in bursts as each pocket passes an associated section of said stator face surface in its advance into registering with an associated outlet port.

4,285,366
PRESSURE MEDIUM CONTROL SYSTEM FOR AUXILIARY POWER STEERING SYSTEMS

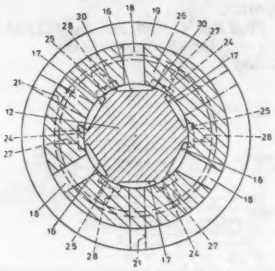
Dieter Elser, Essingen-Lauterburg, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 37,031, May 8, 1979, Pat. No. 4,232,586, which is a continuation of Ser. No. 825,477, Aug. 17, 1977, abandoned. This application Oct. 12, 1978, Ser. No. 950,571

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745786

Int. Cl.³ F15B *13/04*; F16K *11/02*

U.S. Cl. 137—625.23 **5 Claims**



1. In combination with a control device for a pressure medium in an auxiliary power steering system having a rotary valve plug (**12**) journaled at opposite axial ends by anti-friction bearings mounted within a control bushing (**26**), passage means (**16, 17, 31, 32**) formed in the rotary valve plug including axially extending and symmetrically distributed passage grooves formed in the rotary plug and the control bushing and terminating in axially spaced relation to said opposite axial ends, and conduit means (**18, 21**) for conducting the pressure medium to and from two directional control outlets (**27** and **28**) along in-phase parallel flow paths of substantially equal flow volume respectively established through said grooves; means for improving pressure control of the pressure medium at the outlets in response to positioning of the rotary plug, comprising only two beveled edges (**30, 33**) formed on the rotary plug between the conduit means and the passage means along only one of the parallel flow paths to each of said outlets, respectively, to conduct the pressure medium therein in out-of-phase relation to a plurality of the other of the in-phase parallel flow paths.

4,285,367
DEVICE FOR MIXING TWO FLUIDS

Johan P. Nommensen, Stein, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 4, 1980, Ser. No. 127,986

Claims priority, application Netherlands, Mar. 6, 1979, 7901750

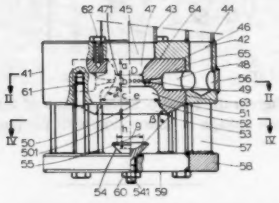
Int. Cl.³ F16K *19/00*

U.S. Cl. 137—888 **14 Claims**

1. Device for mixing two fluids provided with a venturi tube through which a first fluid can flow said venturi tube in the direction flow narrowing in a first part to a throat and then widening in a shorter second part, with a feed member for a second fluid disposed around said venturi tube and from said feed member one or more channels open into said venturi tube, through which said channels said second fluid can be added to

said first fluid, and with a baffle placed axially opposite the mouth of said second part of said venturi tube, comprising,

a venturi tube connecting to a feed line for said first fluid with the length of said first part of said venturi tube from the inlet to said throat of said tube in the range of from about 0.4 D to about 1.6 D, wherein D is the diameter of said throat of said venturi tube, and the length of said shorter second part of said venturi tube from said throat to the outlet of said tube in the range of from about 0.2 D to about 0.7 D, wherein D is the diameter of said throat,



channels for adding said second fluid from said feed member disposed around the venturi tube, said channels opening into said second part of said venturi tube,

a turbulence chamber which connects with an abrupt widening to said outlet of said venturi tube,

a secondary mixing chamber into which said turbulence chamber opens and from which said mixed fluid can issue at the circumference, and

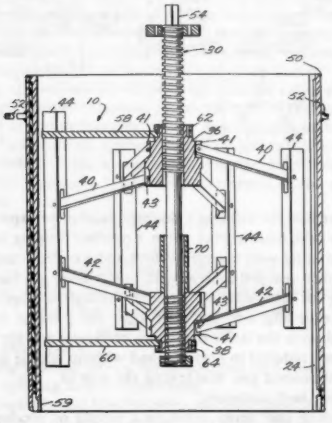
a baffle in the shape of an axially positioned concave dish having its concave side facing said venturi tube, said baffle forming the bottom of said secondary mixing chamber.

4,285,368

PIPELINE STOPPER AND PIPE FITTING

Garrett D. Terrill, and Lynn D. Edwards, both of Decatur, Ill., assignors to Mueller Co., Decatur, Ill.

Filed Jul. 27, 1977, Ser. No. 819,621
Int. Cl.³ F16L *55/12*
U.S. Cl. 138—89 **17 Claims**



1. In combination:

a stopper fitting adapted to be secured around a pipeline, said fitting having a generally tubular portion extending transverse to an axis of the pipeline and through which a transverse circular opening is made in the pipeline, said stopper fitting having at least one inwardly extending lug adjacent one end thereof and positioned exterior of the transverse circular opening through the pipeline;

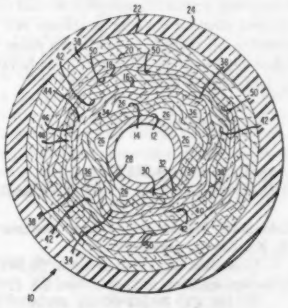
a cylindrical stopper assembly adapted to be inserted into the transverse circular opening of the pipeline, said stopper assembly comprising a longitudinally split expandable and contractible cylindrical sleeve having a gasket material on at least a portion of its outer surface, means on said split cylindrical sleeve cooperating with said at least one lug to axially position said split cylindrical sleeve in the transverse circular opening and to properly orient and prevent rotation of said sleeve with respect to said stopper fitting, said last mentioned means including a notch in the lower edge of said cylindrical sleeve for receiving said at least one lug, said stopper assembly further including means to expand said sleeve into sealing engagement with edges of opening in the pipeline and to contract said sleeve out of engagement, said means comprising a plurality of angularly spaced longitudinally extending bars secured to the inner surface of said sleeve, each of said bars having a slot adjacent each end thereof, a jackscrew, a pair of members threadedly connected to said jackscrew for movement toward and away from each other, a first set of angularly spaced toggle arms pivotally connected to one of said members and to said bars in the slots adjacent one end of the same; and a second set of angularly spaced toggle arms pivotally connected to the other of said members and to said bars in the slots at the other end of the same whereby movement of said members relative to each other expand and contract said sleeve, stop means slidably mounted on said jackscrew and loosely carried by one of said members for engaging the other of said members to thereby control maximum expansion of said cylindrical sleeve by limiting movement of said members toward each other and by limiting pivotal movement of said arms to an angle no greater than 90° to the longitudinal axis of said jackscrew, and means separate from said toggle arms and extending between at least one of said members and said bars and movable with said one member and relative to said bars for transferring torque from said members during operation directly to said longitudinally extending bars and said cylindrical sleeve without torque being transferred through said toggle arms.

4,285,369

THERMAL INSULATION ENHANCEMENT

Thaddeus D. Misiura, Princeton Junction, N.J., and Gordon K. Lambert, Starkville, Miss., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 874,980, Feb. 3, 1978, abandoned, which is a continuation of Ser. No. 709,038, Jul. 27, 1976, abandoned. This application Jan. 9, 1980, Ser. No. 110,862
Int. Cl.³ F16L *11/12*
U.S. Cl. 138—149 **6 Claims**



1. A thermally insulated tubing product comprising a tubular core element for conveying a fluid the temperature of which is to be maintained, said tubular core element having a smooth

and uninterrupted cylindrical outer surface, and a wrap of thermally insulative tape extending about said element having more than one lamination, at least more than one of said laminations being wrapped around core element at preselected helix angles to cause said laminations to be randomly wrinkled and to define random air spaces to enhance the insulating properties of said wrap, said air spaces decreasing progressively in volume in a direction taken radially outwardly from the core element.

4,285,370

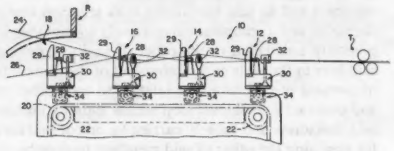
SHED RETAINER

Thomas F. McGinley, 175 Prospect St., Phillipsburg, N.J. 08865

Filed Jul. 19, 1979, Ser. No. 58,790

Int. Cl.³ D03D *47/00*

U.S. Cl. 139—11 **12 Claims**



1. A shed-retaining member for use in connection with a loom for the weaving of warp and weft threads into fabric of the type wherein said loom has a shed-forming means for elevating some of said warp threads and depressing others of said warp threads to form warp sheds, said shed-retaining member being insertable between adjacent warp threads to maintain said warp sheds, said shed-retaining member comprising:

an upper surface which in a first position is engageable with at least one elevated warp thread, and a lower surface which in said first position is engageable with at least one depressed warp thread;

means for moving said shed-retaining member to a second position in which neither said elevated warp thread nor said depressed warp thread is retained on said respective upper and lower surfaces of said shed-retaining member; and

said shed-retaining member including at least one spacing surface for engagement with said warp threads to space said warp threads, said spacing surface constructed and arranged to operate to increase the spacing between groups of at least said depressed warp threads when said shed-retaining member is moved from said first position to said second position in order to release said elevated and depressed warp threads toward each other and to allow said shed-retaining member to be withdrawn from between said warp threads.

4,285,371

METHOD FOR GUIDING WARP THREADS WITH A BACK REED

Hissai Nishiyama, Hayahoshi, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

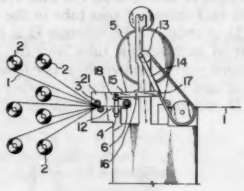
Filed Jun. 20, 1979, Ser. No. 50,341

Claims priority, application Japan, Jun. 22, 1978, 53-76017

Int. Cl.³ D03D *49/00, 49/04*

U.S. Cl. 139—97 **5 Claims**

1. A loom having a back reed, with dents for spacing warp threads running therethrough and which is movable in reciprocative motion in a direction parallel to the dents and vertically transverse to the running direction of the warp threads, and a rotating tension drum to impart tension to the running warp



threads wherein the reciprocative motion of the back reed is effected by a linkage in connection with the tension drum.

4,285,372

METHOD AND DEVICE FOR THE REFILLING OF DOUBLE CHAMBER PRESSPACK SPRAY CONTAINERS

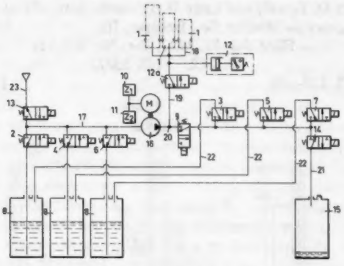
Lothar Kieber, Mulheim an der Ruhr, Fed. Rep. of Germany, assignor to Deutsche Calypsolgesellschaft mbH & Co., Düsseldorf, Fed. Rep. of Germany

Filed Sep. 25, 1979, Ser. No. 78,735

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1978, 7828516[U]

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—2 **7 Claims**



1. A method for refilling a double-chamber presspack spray container which has a spray valve, a product-holding inner bag communicating with the spray valve and a sealed, compressed gas chamber charged therein with compressed gas biasing the inner bag for dispensing the product through said spray valve without expelling said gas, and after the product has been dispensed with the inner bag being collapsed and the gas expanded and reduced in pressure, and without adding any additional compressed gas, comprising the step of

inverting said container,

connecting said spray valve to a supply of product to be refilled into said collapsed inner bag without adding any additional gas into the gas chamber,

selectively metering the product into the collapsed inner bag so as to fill and expand said bag against the force of the gas and compressing and building up the pressure of the gas back to its original compressed gas pressurized condition without adding any additional gas into the gas chamber,

disconnecting the supply of product from the spray valve,

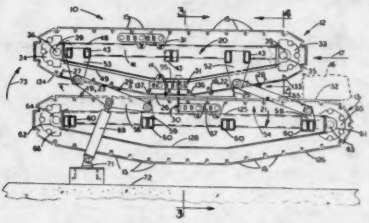
removing the refilled container with the refilled product and unused compressed gas.

4,285,373

CRUSHING APPARATUS

Robert H. Buchanan, 102-2445 Cornwall St., Vancouver B. C., Canada (V6K 1V9)

Filed Oct. 15, 1979, Ser. No. 84,806
Int. Cl.³ B29C *15/00*
U.S. Cl. 144—2 R **16 Claims**



1. A crushing apparatus having: oppositely disposed first and second endless loops of crushing belts carried on respective support means and disposed so that an inner run of the first belt is spaced closely to an adjacent inner run of the second belt to define a throat therebetween, wherein each belt has a slat bed having a plurality of closely spaced slats connected together and extending transversely thereacross to provide an essentially continuous working surface when the slats are coplanar, the apparatus also including means to power at least one belt and converging intake means communicating with the throat to admit a forward end of material to be crushed between the belts, the apparatus being further characterized by:

(a) each slat having particular roller means journalled thereon, the roller means being disposed adjacent an inner surface of the slat remote from the working surface and extending substantially along the length of the slat to follow movement of the particular slat and to support the slat along the length thereof, each roller means having means associated theewith defining a longitudinal guiding means,

(b) rail means carried on the respective support means and extending adjacent and along the two opposed inner runs of the belts that define the throat, the rail means extending between outer portions of each respective endless loop of belt and adjacent the inner surfaces of the slats of the inner runs, the rail means cooperating with the roller means to support against crushing forces the runs of the belts adjacent to and defining the throat and also cooperating with the longitudinal guiding means of the roller means to restrain the roller means and slats against lateral shifting to ensure essentially longitudinal movement of the crushing belts.

4,285,374

MOBILE WOOD SPLITTER

Edward R. Klingel, 405 Poplar St., Stroudsburg, Pa. 18360

Filed Sep. 14, 1979, Ser. No. 75,680
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 A **1 Claim**

1. A log splitting device for attachment to a motor vehicle, said log splitting device comprising:

an elongated rigid base member, said base member including an I-beam having a topmost flanged portion onto which a log to be split may be positioned;

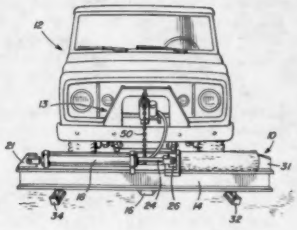
a ram slidingly mounted to a first end of said topmost flanged portion of said I-beam, said ram including an upstanding plate abuttable against a first end of said log and a piston member pivotally attached to said upstanding plate for facilitating a horizontal sliding movement of said plate along said topmost flanged portion of said I-beam;

hydraulic power means operably connected to said piston member for facilitating said horizontal movement of said plate, said hydraulic power means including a hydraulic cylinder having one end pivotally attached to said topmost flanged portion of said I-beam, said piston member operably extending from and being movable relative to a second end of said hydraulic cylinder;

a cutting wedge member operably attached to a second end of said topmost flanged portion of said I-beam, said cutting wedge member being abuttable against said second end of said log whereby said log may be forced against said wedge member in response to an extending movement of said piston member from said hydraulic cylinder to thereby facilitate the splitting of said log;

first guide means associated with said hydraulic cylinder, said first guide means being fixedly attached to said hydraulic cylinder and being abuttable against said topmost flanged portion of said I-beam to prevent a lateral displacement of said hydraulic cylinder from said topmost flanged portion, said first guide means including a pair of downwardly extending clips which overlap an edge portion of said topmost flanged portion of said I-beam so as to permit a vertical upward movement of said hydraulic cylinder while preventing any lateral movement thereof;

second guide means associated with said upstanding plate, said second guide means being fixedly attached to said upstanding plate and being slidably engageable with said



topmost flanged portion of said I-beam so as to prevent both lateral and vertical displacement of said upstanding plate and said piston member from said topmost flanged portion of said I-beam, said second guide means including a pair of downwardly extending and inturned guide members which serve to overlap said edge portions of said topmost flanged portion of said I-beam so as to prevent both vertical and lateral movement of said upstanding plate;

a mounting frame connectible to a motor vehicle and having said I-beam fixedly secured thereto, said mounting frame including a pair of diverging legs, each having first ends fixedly securable to a bottommost flange of said I-beam and being further secured together by first and second cross members, said first cross member having a first mounting bracket extending upwardly therefrom, said first mounting bracket serving as a connection means for a chain hoist means, said second cross member having a pair of second mounting brackets extending laterally therefrom, said second mounting brackets being attachable to a structural member of said motor vehicle; and

a pair of leg members extending downwardly from said I-beam to support said log splitting device from a supporting surface when in use.

4,285,375

T-BAR RATCHETING SCREWDRIVER

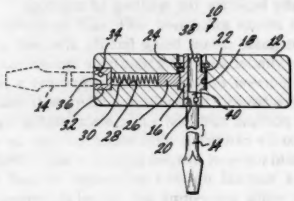
J. Bruce Judson, 1711 Kenora Dr., Escondido, Calif. 92027

Filed Jun. 20, 1980, Ser. No. 161,587
Int. Cl.³ B25G *1/08*
U.S. Cl. 145—77 **2 Claims**

1. A T-bar ratcheting screwdriver assembly comprising in combination:

an elongated generally cylindrical handle for grasping in the hand including a socket fixed co-axially thereof for detachably receiving a screwdriver shank for rotation therewith,

ratchet rotor means having teeth formed on the outer diameter thereof, and mounted in a transverse bore substantially midway between the ends of said handle and having a rotary axis transverse to the axis of said handle and a shank receiving socket in each end thereof extending to and accessible to opposite sides of said handle for alternately



detachably receiving a screwdriver shank for reversible rotation thereof by said handle, and

a pawl member slideably mounted in a channel extending along the axis of said handle and biased into engagement with said teeth,

a screwdriver stem having a shank portion for removably mounting in said socket for rotation therewith said handle includes a bore coaxially in one end thereof communicating with said channel, and

a plug member having said socket therein press fitted into said bore.

4,285,376

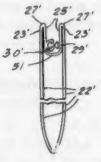
RECLOSABLE PLASTIC BAG CONSTRUCTION MADE FROM A ONE PIECE EXTRUSION

Steven Ausnit, New York, N.Y., assignor to Minigrip, Inc., Orangeburg, N.Y.

Filed Jul. 7, 1977, Ser. No. 813,450

Int. Cl.³ B65D *33/02*

U.S. Cl. 150—3 **7 Claims**



1. A plastic bag construction made from a one piece extrusion, comprising:

a pouch body;

an infolded security closure forming a gusset extending into the top of the pouch body;

side wall panels defining the pouch body;

gusset walls integral in one piece at their top edges with the side wall panels and extending folded inwardly from said top edges and forming with said wall panels double thickness free upper end bag mouth flange extensions on the bag serving as digitally manipulatable bag opening pull flanges;

said gusset providing a seal for the bag mouth and having a lower closed portion adapted to be severed or punctured to open the gusset to gain access to contents within the bag body pouch;

and separable fastener means comprising complementary flexible fastener profiles which are integral parts of said extrusion located inwardly from said double thickness free upper end bag mouth flange extensions and adjacent to the gusset, said profiles being separable by pulling said upper thickness bag mouth flange extensions apart and being reclosable to seal the bag after the gusset has been opened;

said fastener profiles being formed integrally on said gusset walls.

4,285,377

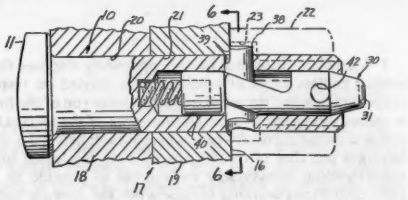
SAFETY BOLT

Dale H. Hart, Seal Beach, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 781,851, Mar. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 757,574, Jan. 7, 1977, abandoned. This application Feb. 28, 1978, Ser. No. 881,141

Int. Cl.² F16B *39/04*

U.S. Cl. 411—190 **14 Claims**



1. A safety bolt comprising: an element having a shank with an axis, the element having a first end and a second end, an axial passage opening onto one of said ends, and a laterally-extending passage in the shank and intersecting the axial passage; a dog in said laterally-extending passage slidably movable between an extending and a retracted position, whereby the dog extends beyond the maximum diameter of the shank in the extended position and retracts entirely within said shank in the retracted position, thereby being adapted to abut the back side of a workpiece into which the shank is inserted; a cam member axially movable in said axial passage and reactive with said dog to retract or to extend the same, said cam member having a pair of sloping cam surfaces which face in opposite lateral directions; a pair of oppositely facing spaced-apart follower surfaces on said dog, each said follower surface being parallel to and engaging a respective one of said cam surfaces in substantial surface-to-surface contact, whereby one set of said cam surfaces and follower surfaces causes movement of the dog in one direction of movement of the cam member and the other set causes movement of the dog in the other direction of movement of the cam member, said sets being in embracing relationship, whereby the lateral position of the dog is a unique function of the axial location of the cam member in the axial passage; and bias means biasing the cam member in its direction which forces the dog toward its extended position, the dog when extended when the shank is fully inserted in the workpiece preventing the removal of the bolt from the workpiece.

4,285,378

THREAD LOCK

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

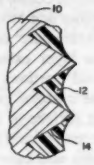
Continuation of Ser. No. 745,796, Nov. 29, 1976, abandoned. This application May 8, 1978, Ser. No. 903,738

Int. Cl.³ F16B *39/34*; B05D *3/02*

U.S. Cl. 411—258 **18 Claims**

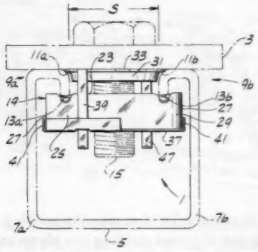
1. A metal threaded member having in the thread grooves thereof a solid deposit of friction material effective to provide a frictional resistance to turning of the threaded member in thread-engaging relation to a companion threaded member, said deposit consisting essentially of a body of a uniform mixture throughout of a major proportion of uniformly dispersed

discrete particles of pre-cured thermoplastic resin adhered together to form a substantially solid continuum by a bonding resin cured in situ, said bonding resin forming a bond directly



between individual particles, substantially filling the spaces between the particles, and also forming an essentially permanent bond to the surfaces of the threads throughout the deposit area.

4,285,379
FASTENER
Joseph W. Kowalski, Florissant, Mo., assignor to B-Line Systems, Inc., Highland, Ill.
Filed Sep. 17, 1979, Ser. No. 76,461
Int. Cl.³ F16B *39/00*
U.S. Cl. 411—85 **8 Claims**

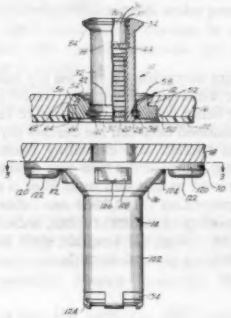


1. For securement to metal framing having a slot and inside and outside faces on opposite sides of the slot for attachment of parts to the framing through the slot from the outside of the slot, a fastener comprising:

an elongate body having a first face constituting an inside face and an opposite face constituting an outside face, opposite sides, and opposite ends, the width of said body between said sides being less than the width of the slot in the framing whereby the body may be generally aligned with the slot, entered into the slot and passed through the slot from the outside to the inside of the framing and then turned to extend in crosswise position relative to the slot for engagement of portions of the outside face of the body adjacent the ends of the body with the inside face of the framing at opposite sides of the slot;

means for clamping the body in place in its said crosswise position comprising a clamp member carried by the body on the outside face of the body for engagement with the outside face of the framing on opposite sides of the slot when the body is generally aligned with and entered into and passed through the slot and also when the body is turned to its said crosswise position; and retaining means for holding the clamp member in assembly with the body while permitting movement of the clamp member relative to said body between an extended position in which the clamp member is spaced away from the outside face of the body and a retracted position wherein the clamp member is more closely adjacent the outside face of the body, said retaining means comprising a retainer on the inside face of the body, and guide members extending from the clamp member on opposite sides of the body having a length greater than the thickness of said body and projecting inwardly beyond the inside face of the body and said retainer when said clamp member is in its said retracted position, at least one of said guide members having a portion bent to provide spring finger means engageable with said retainer on the inside face of the body for providing spring action tending to draw the clamp member in the direction back toward the outside face of the body for clampwise engagement of the body and clamp member with portions of the framing on opposite sides of the slot.

4,285,380
PANEL FASTENER
Bulent Gulistan, Woodland Hills, Calif., assignor to VSI Corporation, Pasadena, Calif.
Filed Mar. 30, 1979, Ser. No. 25,363
Int. Cl.³ F16B *43/00*
U.S. Cl. 411—103 **12 Claims**



1. In a panel fastener of the type having a stud assembly that has a stud and which is adapted to be attached to a substructure, a stud nut adapted to be attached to a panel and to engage the stud, and a retaining ring adapted to hold the stud nut to a top panel while permitting the stud nut to move along its axis for approaching toward and retracting away from the stud assembly, the retaining ring being in compressive radial bearing with the stud nut over a continuous range of axial positions of the stud nut with respect to the panel, an improvement which comprises:

(a) a clear through bore in the stud nut;

(b) an internally threaded section at one end of the bore;

(c) a hardened wrenching insert at the other end of the bore having a wrenching socket adapted to receive a wrenching tool;

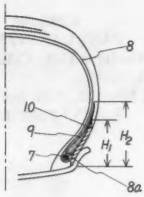
(d) a thin plug in the bore between the wrenching insert and the internal threads to separate the two;

(e) a grommet adapted for attachment to the top panel, and having a wall defining an axial bore for receiving the stud nut, a standoff base adapted for receipt in a counterbore in the top panel and for extending below the lower surface of the top panel to present a barrier to a gasket from moving radially inward towards the axis of the stud nut, an annular interior groove in the standoff portion opening into the axial bore and spaced from a lower surface of the standoff portion by a portion of the wall defining the axial bore, the groove receiving and capturing the retaining ring, a neck integral with and axially adjacent the standoff base, and having a major outer diameter less than the major outer diameter of the standoff base, and a seating and clamping section integral with and axially adjacent the neck, the seating and clamping section being adapted to be flared radially outward from the axis of the axial bore to define a conical seat for a head of the stud nut and to cooperate with the standoff base in clamping the grommet to the top panel.

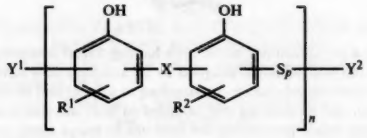
4,285,381
CURABLE COMPOSITION FOR HARD RUBBER AND THE USE THEREOF

Hiroshi Furukawa, Kobe, and Takehiko Tsuyuri, Ashiya, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Jun. 10, 1980, Ser. No. 158,314
Claims priority, application Japan, Jun. 18, 1979, 54-77179
Int. Cl.³ B60C *15/06*
U.S. Cl. 152—362 R **3 Claims**



1. A radial tire comprising a carcass ply composed of cords arranged in the radial direction of tire, the both end portions of the carcass ply being turned up at a bead to fasten, and a bead filler being positioned between the carcass ply and the turned-up end portion thereof and extending from a location just above a bead wire toward the side wall of the tire, said radial tire being improved in that said bead filler is made of a cured composition comprising (1) at least one rubber selected from the group consisting of natural rubber, a diene rubber and a diene copolymer rubber, (2) a sulfide resin as a curing agent having the following general formula:

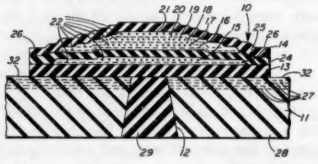


wherein X is methylene group, ethylene group, —S— or —S—S—, R^1 and R^2 are independently a C_{1-10} alkyl or alkylene group, Y^1 and Y^2 are independently the residue of a phenol compound, p is an integer of 2 to 8, and n is an integer of 2 to 5, (3) a phenolic thermosetting resin and (4) a hardener for hardening said thermosetting resin.

4,285,382
TIRE REPAIR PATCH

Jobbie DiRocco, 3424 Sweetbriar Ave., Akron, Ohio 44321, and David J. DiRocco, 7090 Grove Rd., Clinton, Ohio 44216

Filed Jul. 10, 1980, Ser. No. 167,460
Int. Cl.³ B60C *21/02, 21/04*
U.S. Cl. 152—367 **14 Claims**

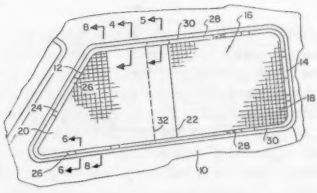


1. A tire repair patch for application to the inner surface of a tire at an injured portion comprising a plurality of overlapping plies of reinforcing cords and at least some of said plies having overlapping end portions, a base cushion gum layer underlying said plies at said underside for engagement with said inner surface of the tire, a top cushion gum layer overlying said plies at the opposite side of the patch from said underside, an intermediate cushion gum layer interposed between at least two of said plies of reinforcing cords, each of said overlapping plies being coated with rubber and having a thickness less than the thickness of said intermediate cushion gum layer, said intermediate cushion gum layer extending continuously between said overlapping end portions of at least two of said reinforcing plies, said base cushion gum layer being adapted for adherence to the inner surface of the tire to provide reinforcement of the tire in the area of said patch, and said reinforcing plies interposed between said base cushion gum layer and said intermediate cushion gum layer interacting with the remainder of said plies and said base and top cushion gum layers for distributing the forces transmitted through said patch at the injured portion of the tire.

4,285,383
ADJUSTABLE VEHICLE SCREEN

Ronald L. Steenburgh, 662 Bellaire St., Peterborough, Canada (K9J 3Y6)

Continuation-in-part of Ser. No. 848,105, Nov. 3, 1977. This application Nov. 22, 1978, Ser. No. 956,474
Int. Cl.³ E06B *9/06*
U.S. Cl. 160—374 **10 Claims**



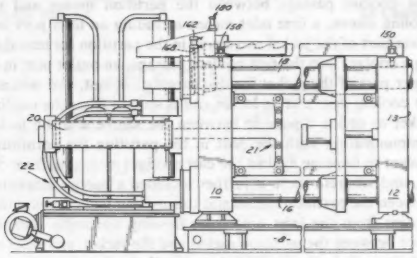
1. An adjustable vehicle screen comprising a closed frame, said frame being disposed residing in a plane, said frame including a plurality of alternate elongated elements, said elongated elements slidably, telescopingly engaged to one another, a screen, said screen including a plurality of screen elements, each said element having a plurality of circularly shaped turns each disposed having a coil-like shape when there is an absence of forces applied thereto in an outward radial-like fashion, said plurality of elements disposed in side by side parallel relationship adjacent one another, adjacent said elements each having said turns thereof interlocking with each other, wherein each of said turns of said each element may be disposed at selected distances apart from one another along the length of said coil-like shape, means to selectively shorten and lengthen said distances upon first opposed forces being applied to the ends of said plurality of elements, means to selectively shorten and lengthen the distance separating the longitudinal axes of said each of said adjacent elements at selected distances apart when second opposed forces are applied to said adjacent elements, means to dispose said circularly shaped turns into elliptically shaped turns when said second opposed forces are applied to adjacent elements directed away from one another, wherein said first opposed forces are at right angles to said second opposed forces, the marginal edges of said screen slidably engaged and captured from disengagement with said frame, said screen residing within said plane, whereby said frame and said screen may be simultaneously, selectively, independently and concurrently expanded and contracted in the length of said coil-like shape and the distance defined by end most said elements upon the application of said first and said second opposed forces to selective portions of said marginal edges of said screen, wherein said frame and said marginal edges of said screen are configured to be in a closed polygonal shape.

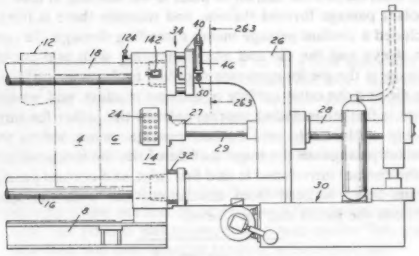
4,285,384

APPARATUS AND METHOD FOR TIE BAR NUT DRIVE SYSTEM

William G. Wunder, Hamilton, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 31, 1979, Ser. No. 89,829
Int. Cl.³ B22D *17/10, 17/26*
U.S. Cl. 164—1 **15 Claims**





1. An apparatus for use with a threaded fastener in a clamp type machine having a front and rear platen spaced apart and with a moveable platen therebetween wherein said fastener includes a threaded member having front locking nut means and rear locking nut means used for restraining said front and said rear platens, the improvement comprising means for removing and holding said front locking nut means of said threaded fastener captive on said front platen of said machine, said holding means supporting said front locking nut means in engaging contact with said front platen during removal of said front locking nut means, a ring gear means in sliding engagement on said front locking nut means is connected to a speed reducer means which can operatively disengage and engage said front locking nut means from said threaded member.

4,285,385

METHOD FOR THE PRODUCTION OF HEAT EXCHANGERS

Masakatsu Hayashi, Ushikumachi; Takeo Tanaka, Minorimachi; Tatsuo Natori, Kashiwa; Tatsushi Aizawa, Shimoinayoshi; Shigeru Kojima, Kasukabe, and Takao Senshu, Shimizu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

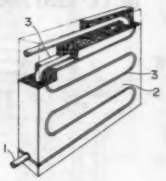
Filed Jun. 22, 1979, Ser. No. 51,141
Claims priority, application Japan, Jun. 28, 1978, 53/77417
Int. Cl.³ B22C *9/04;* B22D *19/00*
U.S. Cl. 164—9 **2 Claims**

1. A method for the production of a heat exchanger comprising the steps of:

casting a mold forming material in a fluid state into continuous, three-dimensional cavities in plastic patterns to produce patten-retaining molds;

removing by heating said plastic patterns from said pattern-retaining molds to produce fin molds;

assembling a plurality of said fin molds with a heat-transmitting pipe shaped beforehand into a substantially serpentine form in such a manner that said fin molds enclose said heat-transmitting pipe with suitable spacing intervals defined between said fin molds themselves and between said fin molds and said heat-transmitting pipe, thereby to produce a fin block mold formed therein with continuous, three-dimensional cavities;



casting by introducing molten metal under pressure into said continuous, three-dimensional cavities in said fin block mold and into said spacing intervals and allowing said molten metal to solidify; and

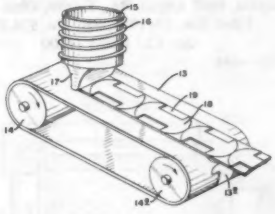
removing the material of said fin block mold, thereby producing said heat exchanger in which a porous metal block formed with continuous, three-dimensional pores and fin plates connected to said porous metal block which are unitarily secured to said heat-transmitting pipe.

4,285,386

CONTINUOUS CASTING METHOD AND APPARATUS FOR MAKING DEFINED SHAPES OF THIN SHEET

Mandayam C. Narasimhan, Seekonk, Mass., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Mar. 16, 1979, Ser. No. 20,906
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.³ B22D *11/06, 25/00*
U.S. Cl. 164—463 **15 Claims**



8. The method of making essentially flat metal sheets having predetermined defined outline directly from molten metal comprising:

a forcing the molten metal under pressure through a slotted nozzle located in close proximity to a chill surface which is provided with raised and/or lowered essentially flat domains having the outline of the desired shape of the shaped metal sheet product, said domains being defined by a bordering wall having a height of at least about 0.02 millimeter, said bordering wall being formed at an angle deviating not more than about 20° from the normal to the chill surface and said nozzle having its slot arranged generally perpendicular to the direction of movement of the chill surface.

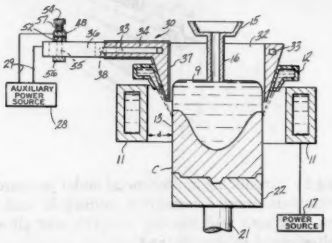
b. advancing the chill surface, at a predetermined speed; and

c. quenching the molten metal in contact with the chill surface to permit the metal to solidify on the chill surface to form the essentially flat metal sheets having an outline corresponding to that of the bordering walls of said domains.

4,285,387
TRANSFORMER-DRIVEN SHIELD FOR ELECTROMAGNETIC CASTING

Peter J. Kindlmann, Northford; John C. Yarwood, Madison; Gary L. Ungarean, Woodbridge, and Derek E. Tyler, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 14, 1980, Ser. No. 111,485
Int. Cl.³ B22D 27/02
U.S. Cl. 164—603 12 Claims

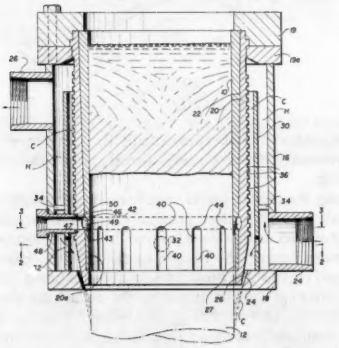


1. In an apparatus for electromagnetically forming molten materials into a casting of desired shape comprising means establishing a casting zone for receiving and electromagnetically forming said molten material into said desired shape, said receiving and forming means including an inductor carrying a driven current for generating a magnetic field, and a non-magnetic shield for attenuating said magnetic field, said inductor and non-magnetic shield being positioned relative to each other to enable inducing of a current by said inductor in said non-magnetic shield, the improvement comprising: means for actively driving said non-magnetic shield to establishing a bucking current therein.

4,285,388
COOLING SYSTEM FOR CONTINUOUS CASTING OF BAR PRODUCTS

Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

Filed Dec. 29, 1978, Ser. No. 974,317
Int. Cl.³ B22D 11/00
U.S. Cl. 164—444 1 Claim

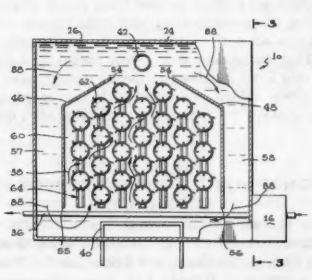


1. A die and cooler assembly for use in a continuous vertical casting operation, the assembly comprising, a vertical die having a vertical bar forming passage for receiving molten material and for casting the same into a product, with the product emerging from the bottom of the die, and a cooling sleeve surrounding and in engagement with the die throughout a substantial portion thereof, a cooling jacket surrounding the cooling sleeve and defining therewith a space for receiving coolant, said cooling sleeve having substantially throughout its outer surface a plurality of annular channels for receiving coolant, and wherein said annular channels in the cooling sleeve extend continuously in helical fashion for conveying coolant in contact with the cooling sleeve substantially uniformly throughout a substantial length of the cooling sleeve, and wherein there is further included partition means surrounding and spaced from the cooling jacket and defining a first coolant passage between the partition means and the cooling sleeve, a first inlet means including an inlet port in a lower part of the jacket and a port in the partition for introducing a coolant into the first coolant passage, an outlet port in an upper part of the jacket for discharging coolant, and wherein the cooling sleeve at its lower end is spaced from the cooling jacket to define a passage between the sleeve and the jacket communicating with the port in the partition for permitting coolant to impinge against the cast product emerging from the die, and wherein there is further included a barrier extending between the partition means and the cooling jacket preventing coolant from the inlet port from flowing upwardly into the space between the partition means and the jacket, and wherein said channels in the cooling sleeve are helical grooves formed in the sleeve and having a generally U-shaped cross section, and wherein said die has, on its inner lower surface, at least one coolant passage formed therein, and wherein there is further included a coolant passage means extending through the coolant sleeve and the die and communicating with said coolant passage in the die for conveying coolant to the inner surface of the die and the outer surface of the cast product, and wherein there is further included another inlet in the jacket for introducing coolant into said coolant passage means and to said coolant passage on the inner surface of the die independently of the coolant introduced in said first inlet, said coolant passage means being isolated from communication. with the space between the jacket and the sleeve.

4,285,389
THERMAL ENERGY STORAGE APPARATUS

Jack F. Horton, 4572 Via Marina #203, Marina del Rey, Calif. 90291

Filed Dec. 26, 1979, Ser. No. 106,770
Int. Cl.³ F28D 21/00
U.S. Cl. 165—1 21 Claims



20. A method of storing thermal energy comprising the steps of:

heating a lower portion of a bath liquid thereby creating a convection current in said bath liquid;

rotatably mounting one or more containers holding a heat storage material in a portion of said convection current;

rotating said containers by said convection current; and

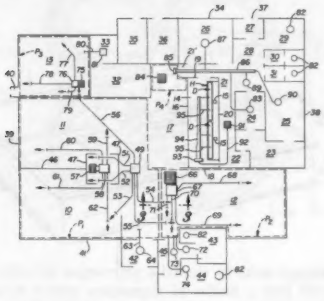
isolating said rotatably mounted containers from a downwardly moving portion of said convection current.

4,285,390

METHOD OF AND APPARATUS FOR SUPPLYING TREATED AIR TO SPACES HAVING DIFFERENT COOLING REQUIREMENTS

Dennis M. Fortune, Longmont, and Victor D. Molitor, Denver, both of Colo., assignors to Stainless Equipment Company, Englewood, Colo.

Filed Apr. 16, 1979, Ser. No. 30,117
Int. Cl.³ F25B 13/00; F24F 3/14
U.S. Cl. 165—2 14 Claims



1. A method for supplying treated air to a first space and a second space, wherein air may be transferred from said first space to said second space and said second space requires additional cooling of the transferred air and contains cooking equipment and means for removing heated gases and products of cooking from above said cooking equipment, which comprises:

cooling fresh air and supplying the same to said first space;

removing a first portion of air from said first space, cooling said first portion and reintroducing said cooled first portion into said first space as treated, recirculated air;

removing a second portion of air from said first space and passing at least a part of said second portion into engagement with water, so as to chill said water and also cool said air of said part of said second portion;

introducing said cooled part of said second portion of air into said second space;

passing the water chilled by engagement with said part of said second portion in heat exchange relationship with air to be introduced into said first space; and

alternatively transferring heat from said heated gases and products of cooking to a heat transfer liquid and passing said heat transfer liquid in heat exchange relationship, directly or indirectly, with said incoming fresh air.

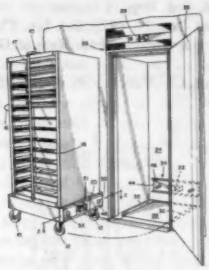
4,285,391

ELECTRICAL SYSTEM FOR FOOD SERVICE DEVICES

Howard Bourner, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Nashville, Tenn.

Filed Aug. 29, 1979, Ser. No. 70,680
Int. Cl.³ F25B 29/00
U.S. Cl. 165—30 8 Claims

1. In apparatus for storing, refrigerating and heating food items, including covered trays, a movable cart having a plurality of shelves to receive the trays, a refrigerator for receiving the cart with trays therein, and wherein said trays are formed with dish holding compartments and openings for receiving other dishes and said shelves have electrical heating areas positioned under said openings and dishes in said openings are disposed thereon to be heated before serving, the improvement in an electrical control and supply apparatus for the heater areas comprising: a switch means adjacent to each of the one or more shelves to control the application of electrical power to the heating areas of said shelves, said switch means including a sensing lever having a free end projected into an area above the shelf where a covered tray placed on a shelf may engage a sensing lever to operate said switch means, wherein a cover for each tray extends over a portion of each tray whereby when a covered tray has a first orientation on a shelf the cover will



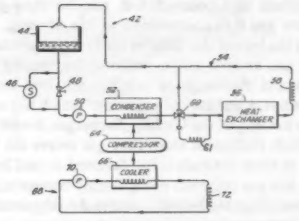
engage said sensing lever to actuate said switch means, and when a covered tray has a second orientation on a shelf the cover will not engage said sensing lever.

4,285,392

HEATING AND COOLING SYSTEM

Robert L. Rannow, New York, N.Y., assignor to Thermocycle, Inc., New York, N.Y.

Filed Jul. 27, 1979, Ser. No. 61,397
Int. Cl.³ F24F 3/00
U.S. Cl. 165—50 3 Claims



1. In a heating and cooling system for a building, including a cooling tower, cooling tower water circuit means for circulating the water of said cooling tower, a heated water circuit in said building, condenser means for providing heat to said heated water circuit and compressor means operating said condenser means, the improvement comprising:

means for cleaning and treating said cooling tower water;

means for directly injecting said cleaned and treated cooling tower water into said heated water circuit to thereby circulate said cleaned and treated cooling tower water in the heated water circuit, thus eliminating the need for dual circulated condensers in said system and;

bybass means for bypassing at least a portion of said water passing from said cooling tower water circuit to said heated water circuit back into said cooling tower water circuits.

4,285,393

HEAT EXCHANGER FOR HIGH-TEMPERATURE GASES

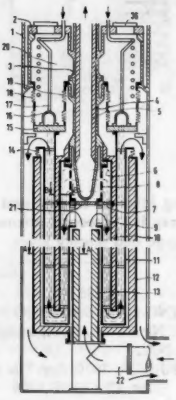
Wolfgang Maus; Wolfgang Niemeyer, and Helmut Swars, all of Bergisch Gladbach, Fed. Rep. of Germany, assignors to GHT, Gesellschaft Für Hochtemperaturreaktor-Technik mbH, Bergisch Gladbach, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,255

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1978, 2846581

Int. Cl.[3] F28D *7/06;* F28F *9/02*

U.S. Cl. 165—76 11 Claims



1. Heat exchanger for high temperature gases, particularly for the heat transfer from a primary gas circuit to a secondary gas circuit in a high temperature nuclear reactor, with the secondary gas flowing counter-current to the primary gas, comprising a heat exchanger housing, a plurality of U-tubes with vertical legs connected in parallel through which the secondary gas flows, contained in the housing, passageways adjacent the legs of the U-tubes for the counter-current flow of primary gas, an inlet and an outlet in the housing for the introductions and discharge of primary gas into and out of the passageways, a hot gas collector into which hot secondary gas from the hot end of the U-tubes discharges, a cold gas collector from which the colder secondary gas enters the U-tubes, said U-tubes at their hot ends being fastened to said hot gas collector, said hot gas collector being fixedly connected in a longitudinal direction at the housing, and said cold gas collector being flexibly fastened at the housing.

4,285,394

MANIFOLD HEAT EXCHANGER

James M. Stewart, 115 Sylvan Way, Greenville, S.C. 29606

Filed Dec. 12, 1977, Ser. No. 859,977

Int. Cl.[3] F28D *15/00*

U.S. Cl. 165—104.21 5 Claims

1. Heat pipe heat exchange apparatus for conducting heat between a gas stream and a liquid comprising:

an elongated substantially horizontal manifold;

a liquid carrying pipe extending within said manifold in spaced relation thereto;

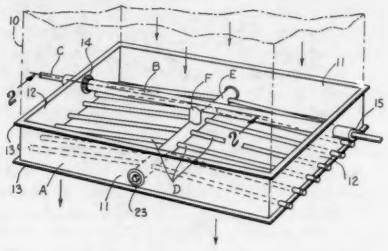
a plurality of spaced heat tubes having a vaporizable liquid medium partially filling same;

means mounting said heat tubes in heat exchange relation to said gas stream in a generally side-by-side manner for individual contact with said gas stream;

conduit means communicating with said manifold for collecting said liquid medium from said heat tubes for controlling the liquid level therein and for conveying vaporized medium into said manifold in heat exchange relation to said liquid within said pipe;

said spaced heat tubes having one end carried by said conduit means being open thereto and an opposing end extending away therefrom;

said heat tubes being substantially horizontal relative to said conduit means so that said liquid medium in said heat tubes



is maintained at a level at which said tubes are only partially filled along substantially the entire length thereof; and

said heat tubes being carried by opposing sides of said conduit means extending outwardly from both said sides in substantially horizontal relationship.

4,285,395

STRUCTURE OF FLUID CONDENSING AND HEAT CONDUCTING SURFACE OF CONDENSER

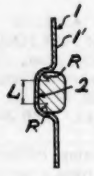
Kenzo Masutani; Akira Horiguchi, and Hiroyuki Sumitomo, all of Osaka, Japan, assignors to Hisaka Works, Limited, Osaka, Japan

Filed Aug. 3, 1979, Ser. No. 63,407

Claims priority, application Japan, Aug. 3, 1978, 53-95209

Int. Cl.[3] F28B *9/08*

U.S. Cl. 165—110 1 Claim



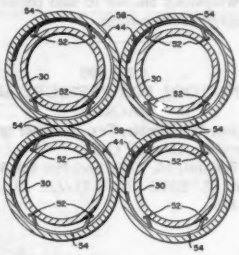
1. A structure of a fluid condensing and heat conducting surface of a condenser plate characterized in that completely recessed grooves for collecting fluid are provided on said surface integrally therewith, said grooves each having two rounded corners of a predetermined radius with the centers of said radii being spaced from each other, and positioned on the same side of said plate, wherein the distance between the centers of radii of rounded corners of said groove is made less than 3 mm.

4,285,396

STEAM GENERATOR TUBE SUPPORT SYSTEM

Frank Schwoerer, Chevy Chase, Md., and William J. Wachter, Wexford, Pa., assignors to Wachter Associates, Inc., Gibsonia, Pa.

Filed Jan. 25, 1979, Ser. No. 6,415
Int. Cl.³ F28D 7/00; F22B 37/24
U.S. Cl. 165—162 11 Claims



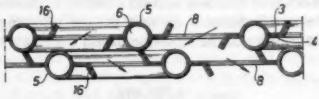
1. A system for supporting a bundle of tubes against lateral movement in a heat exchanger in which a first fluid flows through the tubes and a second fluid flows past the outer walls of the tubes so as to transfer heat from one fluid to the other, said system comprising spring collar devices each surrounding a tube forming said bundle with adjacent spring collar devices being in engagement with each other to form a cluster of such spring collar devices to laterally support the bundle of tubes, each spring collar device having at least one resilient tube contacting portion for independent resilient lateral support of a tube, the resilient tube contacting portion of each spring collar device comprising a spring tab, tube plate means to support the ends of the tubes for said first fluid flow through the tubes, and a band encircling the outer peripheral surface of said cluster to compressively hold said collar devices together at a spaced relation from said tube plate means while the spring collar devices permit a limited degree of lateral movement of each tube against its encircling spring collar device.

4,285,397

HEAT-EXCHANGERS WITH PLATE-LIKE HEAT EXCHANGE ELEMENTS

John D. B. Östbo, Byvägen 84-86,, 151 52 Södertälje, Sweden

Continuation of Ser. No. 756,156, Jan. 3, 1977, abandoned. This application Oct. 15, 1979, Ser. No. 84,962
Claims priority, application Sweden, Jan. 22, 1976, 7600671; Dec. 29, 1976, 7614704
Int. Cl.³ F28D 9/02; F28F 9/12
U.S. Cl. 165—163 12 Claims



1. In a heat exchanger comprising an array of at least two plate-like heat exchange elements positioned adjacent one another, each of said plate-like heat exchange elements including at least one passageway defined by a bulge in a portion of the wall of said plate-like heat exchange element, coupling means extending between and integrally attached to adjacently disposed plate-like heat exchange elements for providing a transverse flow conduit connecting a first passageway in a first of said plate-like heat exchange elements with a second passageway in a second of said plate-like heat exchange elements, and flow means for providing a flow passage through said array of plate-like heat exchange elements, the improvement which comprises:

said array of plate-like heat exchange elements each including a plurality of apertures extending transversely through wall portions thereof, with said apertures in said first plate-like heat exchange element axially offset from a further plurality of apertures formed in said adjacently disposed second plate-like heat exchange element,

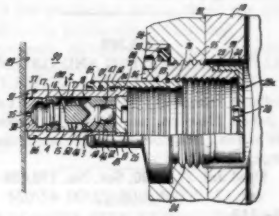
said array of plate-like heat exchange elements each further including a separate pair of parallel flap means extending outwardly in opposite directions from opposite sides of each aperture, with each of said flap means on said first plate-like heat exchange element forming a substantially perpendicular angle with each of said flap means on said second plate-like heat exchange element; and means for substantially reversing the direction of fluid while flowing through said array, thereby creating turbulence and significantly improving the heat transfer within said heat exchanger between said fluid and a further fluid flowing through said passageways in said elements.

4,285,398

DEVICE FOR TEMPORARILY CLOSING DUCT-FORMERS IN WELL COMPLETION APPARATUS

Solis M. Zandmer, deceased, late of Freeport, The Bahamas, and by Herbert M. Zandmer, executor, 1200 S. Flagler Dr., Apt. 1104, West Palm Beach, Fla. 33401

Continuation of Ser. No. 953,119, Oct. 20, 1978, abandoned, which is a continuation of Ser. No. 743,070, Nov. 18, 1976, abandoned, which is a continuation-in-part of Ser. No. 565,363, Apr. 7, 1975, abandoned. This application Oct. 19, 1979, Ser. No. 86,522
Int. Cl.³ E21B 49/10
U.S. Cl. 166—100 38 Claims



1. A duct-forming device for use in well completion apparatus of the kind, wherein a bore hole casing is positioned in a bore hole and duct-forming devices of acid-resistant metal are secured at spaced levels of the casing in alignment with holes machined in the casing wall, and wherein, upon pressurizing the casing space, each duct-forming device is laterally extended from the casing for making contact with a producing formation, each of said duct-forming device comprising:

(a) a terminal sleeve adapted to make contact with the producing formation when the duct-forming device has been laterally extended, said terminal sleeve having passageway means for establishing communication between said formation and the interior space of said duct-forming device;

(b) a passage-forming removable piston assembly within said interior space of the duct-forming device and including means defining passages through said piston assembly and a piston means movable between

I. an initial position in which the piston means permits fluid flow through the passageway means of (a);

II. a blocking position in which said piston means blocks fluid flow through said passageway means of (a); and

III. an ultimate position in which the piston means and the entire piston assembly are forced from the interior space

of said duct-forming device toward and into the casing space;

(c) an acid and/or alkali-soluble closure cap having hole means, said closure cap being mounted on said duct-forming device adjacent the end at which the duct-forming device is secured to said casing; and

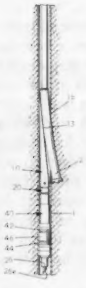
(d) an acid and/or alkali-soluble flow-impeding means located within the interior of said duct-forming device and being interpositioned between said closure cap (c) and said piston assembly (b), whereby acidic or alkaline liquid forced down said casing space impinges on and dissolves that closure cap, while simultaneously passing through said hole means of said closure cap to make contact with and dissolve said flow-impeding means, said liquid, after having eaten through said flow-impeding means flowing through the passages of said piston assembly and through the passageway means in said terminal sleeve into said formation while, depending on its flow rate and its pressure, said liquid gradually moves said piston means of said piston assembly from said initial position (I) into said blocking position (II) to block the communication between the formation and the interior of said duct-forming device, and after said liquid has substantially totally dissolved said flow-impeding means and said closure cap and the formation pressure exceeds the pressure within the interior of said duct-forming device, fluid from said formation forces said piston assembly, including the piston means, towards and into said casing space, said means defining passages through said piston assembly being configured to permit flow from one side of said piston to the opposite side thereof through said terminal sleeve (a) in a direction from said casing toward said formation when said flow-impeding means has been dissolved and when said piston means is in said initial position (I), said piston means including blocking means for blocking flow through said passageway means when said piston means is in said blocking position (II).

4,285,399

APPARATUS FOR SETTING AND ORIENTING A WHIPSTOCK IN A WELL CONDUIT

Arvin E. Holland; Douglas C. Wright, both of Lafayette, La.; John R. Baker, Houston, and Alfred R. Curington, Woodlands, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Jul. 21, 1980, Ser. No. 170,458
Int. Cl.[3] E21B *7/08, 23/00, 47/024*
U.S. Cl. 166—113 **7 Claims**



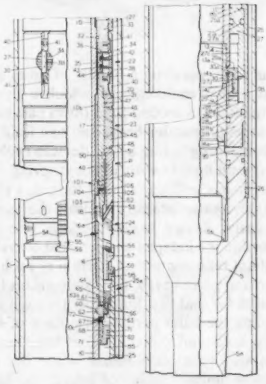
1. An apparatus for setting and orienting a whipstock in a well conduit, comprising: an annular packer mountable in fixed relationship to the well casing, said packer having a key element on its inner periphery; a whipstock anchor having a shaft portion insertable in the bore of said packer, said shaft portion having a key element cooperable with said key element on said packer to angularly fix the whipstock anchor in relation to said packer, said whipstock anchor having a socket portion rotatably mounted on the top of said shaft portion; means in said socket portion for securing a whipstock in fixed relationship therewith; means for indicating the angular position of the tool guiding face of the whipstock relative to said key element on said whipstock shaft; means for locking said whipstock socket to said shaft to position the whipstock face at a pre-selected angular position relative to said key element on said whipstock shaft prior to insertion in the well conduit; and means for securing said whipstock anchor to said packer with said key elements in engaged relationship.

4,285,400

RELEASING TOOL FOR PRESSURE ACTIVATED PACKER

Albert A. Mullins, II, Humble, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jul. 14, 1980, Ser. No. 168,888
Int. Cl.[3] E21B *23/04, 33/128, 33/129*
U.S. Cl. 166—179 **5 Claims**



1. A releasing tool for use in releasing a packer set in a well casing and having a normally pressure balanced annular releasing piston disposed in an annular chamber surrounding an inner annular mandrel body, and a pair of ports respectively connecting between the bore of the packer body and said annular chamber at opposite ends of said piston, said releasing tool comprising: a tubular housing insertable within the bore of the packer body; means within said tubular housing defining a first chamber at atmospheric pressure and a second chamber exposed by an external port to existing tubing pressure; spaced sealing means on said housing isolating one of said packer ports and connecting said isolated port to said second chamber port; and means responsive to an increase in tubing pressure to interconnect said first and second chambers, thereby producing a pressure imbalance on said packer releasing piston to effect said shifting of the releasing piston to release the packer.

4,285,401

ELECTRIC AND HYDRAULIC POWERED THERMAL STIMULATION AND RECOVERY SYSTEM AND METHOD FOR SUBTERRANEAN WELLS

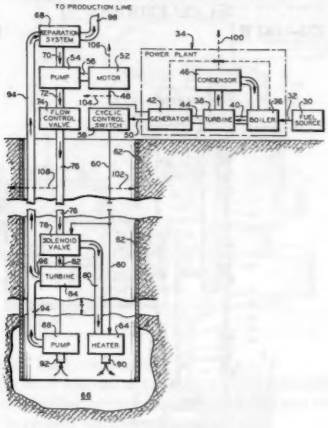
John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., Commerce, Calif.

Filed Jun. 9, 1980, Ser. No. 157,745
Int. Cl.[3] E21B *43/12, 43/24*
U.S. Cl. 166—303 **25 Claims**

1. A system for thermally stimulating and recovering produced fluid from a subterranean well, comprising: a source of pressurized fluid; an electric power source for generating electric energy; a heater means positioned in the well for thermal stimulation and having a fluid inlet connected to said fluid

source, a fluid outlet to the well, and a heating element in said heater connected to said electric power source for converting said electric energy into heat energy; and a fluid driven pump means connected to said fluid source for pumping produced fluid from the well, said pressurized fluid flowing through said heater means and receiving heat energy from said heating element to cool said heater means and to thermally stimulate the well.

15. A method for thermally stimulating and recovering produced fluid from a subterranean well comprising:



(a) supplying electric energy to the bottom of the well;

(b) directing a stream of pressurized fluid to said bottom of the well;

(c) converting said electric energy into heat energy to thermally stimulate the well;

(d) transferring a portion of said heat energy to said fluid stream and utilizing said fluid stream to thermally stimulate the well; and

(e) utilizing hydraulic energy in said fluid stream to pump the produced fluid from the well.

4,285,402

METHOD AND APPARATUS FOR STIMULATING OIL WELL PRODUCTION

Emmet F. Brieger, Bonito Rt., Nogal, N. Mex. 88341

Filed Apr. 28, 1980, Ser. No. 144,688

Int. Cl.[3] **E21B** *33/129, 34/10, 37/00*

U.S. Cl. 166—311 **9 Claims**

1. Apparatus for cleaning perforations in earth formations traversed by a well bore where the well bore contains a well packer and production tubing and where production is from perforations below the packer and through the production tubing to the earth's surface, said apparatus comprising:

an elongated tool body having an upper end adapted for coupling to a string of pipe, said tool body being sized for passage through said production tubing;

packer means on said tool body for movement between a retracted position for passage through said production tubing and an expanded position in sealing engagment with said production tubing;

means in said tool body for passing fluid in only one direction from said upper end in said tool body to the exterior of said tool body at a location above said packer means;

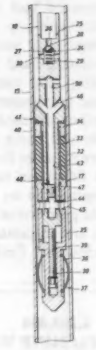
bypass means in said tool body for providing a fluid bypass extending through said packing means and opening to the exterior of said tool body above and below said packing means; and

closure means normally closing said bypass means, said closure means being responsive to a selected pressure differential across said packer means for opening said bypass means.

7. A method for cleaning perforations in earth formations traversed by a well bore where the well bore contains a well packer and production tubing and where production is from perforations below the packer and through the production tubing to the earth's surface, the method comprising:

disposing a stimulation tubing within a production tubing;

packing off the stimulation tubing in a selected area of a production tubing at a location above the perforations to be cleaned;



reducing the pressure in the annulus between the stimulation tubing and the production tubing above the selected area packed off in the production tubing; and

when the pressure differential across said selected areas reaches a preselected value, opening a bypass across said selected area to place the production tubing below said selected area in fluid communication with the annulus between the stimulation tubing and production tubing above said selected area.

4,285,403

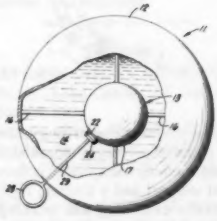
EXPLOSIVE FIRE EXTINGUISHER

Cedric M. Poland, 1850 Carter Dr., Reno, Nev. 89509

Filed Nov. 9, 1979, Ser. No. 92,744

Int. Cl.[3] **A62C** *35/02*

U.S. Cl. 169—28 **3 Claims**



1. An explosive fire extinguishing device comprising:

a. a spherical, frangible outer shell;

b. a spherical, frangible inner shell centrally positioned within said outer shell, said inner shell containing an explosive charge;

c. means for supporting said inner shell in a centrally located position within said outer shell comprising at least one

rigid support leg extending between said inner shell and said outer shell;

d. a fluid medium contained by said outer shell, said fluid medium generally filling the void between said inner shell and said outer shell; and,

e. means for detonating said explosive charge comprising an open ended cylinder intersecting and positioned within said inner shell, one open end of said cylinder being in communication with said fluid medium, the other open end of said cylinder enclosing a percussion cap extending into said explosive charge, a piston positioned within said cylinder and capable of sliding axially away from said one open end of said cylinder in response to an increase in pressure of said fluid medium, said piston including a firing pin directed toward said other open end of said cylinder and said percussion cap, a removable safety closure member positioned over said one open end of said cylinder, thereby isolating said piston from said fluid medium and preventing said piston from sliding in response to any increase in pressure of said fluid medium, and a connecting member attached to said closure member and extending outside said outer shell enabling selective removal of said closure member from said open end of said cylinder so that said firing pin strikes and actuates said percussion cap in response to an increase in pressure of said fluid medium, said percussion cap thereby detonating said explosive charge and instantaneously creating a substantially spherical cloud of finely divided droplets of fluid.

4,285,404

SOIL WORKING MACHINE WITH RESILIENT SUPPORT AND TRAILING, RIGID CONTROL ARM

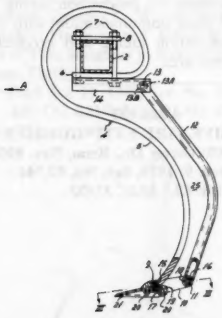
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed May 30, 1979, Ser. No. 43,844

Claims priority, application Netherlands, Jun. 5, 1978, 7806075

Int. Cl.³ A01B *35/06*

U.S. Cl. 172—708 **8 Claims**



1. A soil working machine comprising a frame and at least one soil working member pivotably mounted for displacement on said frame, said member comprising a forward, upwardly extending resilient support and a trailing, rigid control arm, a generally horizontally extending soil working element being pivoted to the lower portions of said support and arm by respective pivots, the upper portions of said support and arm being interconnected to said frame by pivot means, said pivot means including at least one pivot that defines an axis parallel to the axes of said pivots, said control arm having an intermediate curved portion between its upper and lower portions and said curved portion being directed rearwardly with respect to the direction of travel of the implement, whereby said support can deflect rearwardly and said element maintains its working position, a stop being located adjacent said element for limiting the pivotal movement of said element in at least one direction.

4,285,405

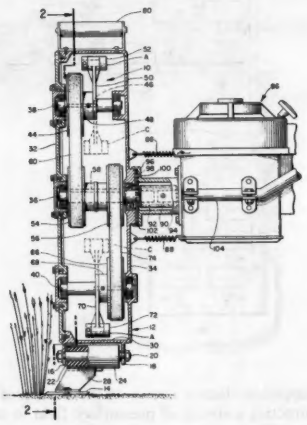
OSCILLATOR FOR RECIPROCATING TOOL OR OTHER DEVICE

Casper J. Weir, Jr., Rte. 3, Box 215-B, San Luis Obispo, Calif. 93401

Filed Dec. 26, 1979, Ser. No. 106,915

Int. Cl.³ E21B *3/00*

U.S. Cl. 173—162 R **12 Claims**



1. An oscillator comprising:

a frame,

a plurality of first means each connecting respective masses to said frame for rotation relative thereto, each mass having a respective axis of rotation in a respective first means,

second means connecting rotatable driving means to said frame and to said first means to rotate said masses, said driving means having an axis of rotation in said second means and being spaced from the axes in the first means,

each mass being spaced from its axis of rotation by a respective rotatable support, each mass and its axis being spaced with respect to the axis of the driving means so that rotation of said masses produces radial forces that are balanced with respect to said last axis,

each mass being positioned on its support so that rotation of the masses by the driving means generates a force through the mass supports to the axes of the respective first means, said last force being tangential with respect to the axis in the second means,

said first means being adapted to transmit said tangential forces to the frame to generate a couple about the axis of the second means to oscillate said frame about said last axis when said frame is supported for oscillation thereat,

power means attached to said frame to rotate said driving means about its axis and to support said frame for oscillation at said last axis,

a device to be reciprocated attached to said frame at one end thereof in the plane through said last axis, and

handle means extending from said power means in a direction away from said frame;

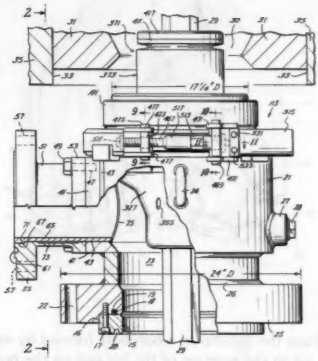
said device being attached at a lower end of said oscillator to support said oscillator on a surface; and

said handle means being adapted for moving said device along said surface and for controlling the position of said oscillator.

4,285,406
DRILLING HEAD

William R. Garrett, Conroe, and David E. Young, Friendswood, both of Tex., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 24, 1979, Ser. No. 69,360
Int. Cl.³ E21B 3/04
U.S. Cl. 175—195 5 Claims



1. Drilling head comprising,

a tubular body adapted at its lower end for connection to the top of a drilling control stack and having a seat at its upper end to receive top closure means,

top closure means including a removable stator having a seating surface releasably supported on said seat, a rotor carrying first replaceable seal means for making a rotating seal with the stator and second replaceable seal means for making an axially slidable seal with a kelly and replaceable bearing means for rotatability supporting the rotor by the stator with respect to both radial and axial thrust,

drive bushing means carried by the rotor for axially slidably engaging a kelly to transmit torque from the kelly to the rotor, and

spline means on an outer periphery of said drive bushing and an inner periphery of said rotor whereby said drive bushing can be released from said rotor and reengaged therewith whenever desired,

said tubular body including a radial flange at its lower end adapted for connection to the flange on the upper end of an adjacent member of a control stack,

said tubular body having an opening at its lower end of a preselected internal diameter that is as large as the internal diameter of such adjacent element of a control stack with which the body is to be connected,

said opening of said preselected diameter forming the throat of the drilling head,

said tubular body having above said throat and outboard of said top closure means a belly portion of smaller outer diameter than said radial flange but of larger internal diameter than said throat adapted to receive said first replaceable seal means when the latter is flexed outwardly, e.g. by a large diameter drill stem member therewithin,

said seating surface on said stator being of smaller diameter than the largest inner diameter of said belly portion, said seat in said body for receiving said top closure means being inboard of said belly portion to receive said seating surface,

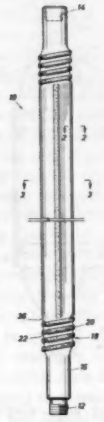
A replaceable metal bushing carried by said stator on the interior of the stator and colevel with said seat and seating surface adapted on its inner periphery to rotatably engage the outer periphery of said first replaceable seal means for making a rotating seal,

said spline means and bearing means being colevel and above said rotating seal and said seat and seating surface.

4,285,407
STRAIGHT HOLE DRILLER

Travis L. Samford, 6110 Elmgrove, Spring, Tex. 77379

Filed Dec. 17, 1979, Ser. No. 104,277
Int. Cl.³ E21C 17/00
U.S. Cl. 175—323 8 Claims



1. For use in a drill string positioned in a well which deviates, a hole straightening apparatus which comprises:

(a) an elongate, axially hollow, tubular member terminating in threaded connections enabling said tubular member to be connected in a drill string;

(b) said tubular member defining an intermediate section forming a plurality of substantially flat surfaces and a plurality of lengthwise straight ribs positioned between adjacent flat surfaces, said lengthwise ribs extending radially outwardly to a specified distance such that, on rotation of the drill string, each of said ribs contacts the deviated well bore to cut against the deviated hole and wherein said ribs each includes exposed hardfacing material thereon and wherein said ribs stand radially further than the adjacent portion of said external face; and

(c) bottom located helical flute means being positioned beneath said ribs and at least partially encircling said tubular member and having a raised portion formed of hardfacing material on said external face to guide and advance said tubular member in a well bore.

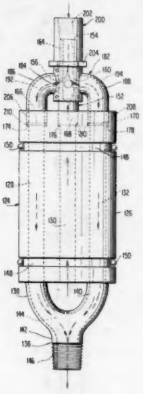
4,285,408
REVERSE CIRCULATING TOOL

Robert L. Franks, Jr., Lake Charles, La., assignor to Well Tools, Inc., Lake Charles, La.

Continuation-in-part of Ser. No. 145,432, May 1, 1980. This application Jun. 2, 1980, Ser. No. 155,656
Int. Cl.³ E21B 17/18, 21/10
U.S. Cl. 175—325 14 Claims

1. A device for reversing the flow of circulating fluid which comprises (i) a cylindrical body, (ii) four passageways lengthwise through the cylindrical body, (iii) a bottom member which is generally Y-shaped, which contains a Y-shaped passageway therethrough, which is affixed on the ends of its two upper arm members to the bottom surface of the cylindrical body so as to have each of its upper arms communicate with one of two generally oppositely located passageways in the cylindrical body, the central axis of the bottom Y-shaped member generally lying on the central axis of the cylindrical

body, (iv) a top stem which has a passageway extending longitudinally through a portion thereof, and which has four side ports located in the side thereof that communicate with the passageway therein, the central axis of the top stem generally lying on the central axis of the cylindrical body, (v) a collar which is rotatably positioned around the region of the top stem where the four ports therein are located, which is slidably removable from the top stem, which contains two side L-



shaped arms, each having an L-shaped passageway therethrough which communicates with one of the ports in the top stem and with the top end of one of the passageways in the cylindrical body, and (vi) retainer means which is detachably positioned around the top region of the top stem and which retains the collar in position around the four ports in the top stem and the two side L-shaped arms of the collar in communication with the appropriate two passageways of the cylindrical body.

4,285,409

TWO CONE BIT WITH EXTENDED DIAMOND CUTTERS

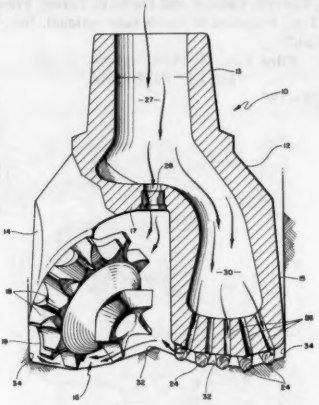
James H. Allen, Lakewood, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 28, 1979, Ser. No. 52,879
Int. Cl.³ E21B *9/08*
U.S. Cl. 175—336 **2 Claims**

1. A three leg segment hybrid rock bit, each leg segment being about 120°, said bit is of the type wherein hydraulic mud is directed to a chamber formed in said bit and out through openings downstream of said chamber, at least one 120° leg segment of said bit is converted to a drag bit segment with insert cutting elements inserted in the face formed by said drag bit segment, the remaining 120° leg segments supporting conventional roller cone cutters, the hybrid bit further comprising:

a multiplicity of hydraulic passages formed in said face of said drag bit leg segment adjacent said insert cutting elements, at least one of said hydraulic passages being positioned adjacent to and in front of at least a pair of said insert cutting elements in said 120° drag bit leg segment, said hydraulic passages communicating with said chamber formed in said hybrid bit, and

a passage for crossflow of said hydraulic mud exiting said hydraulic passages adjacent said insert cutting elements in said 120° drag bit segment and formed between said adjacent roller cone cutters, said crossflow passage between the roller cutters having no hydraulic passage communicating with said chamber, thereby sweeping detritus mate-



rial from the bottom of a borehole formed by said hybrid rock bit to the exterior of the bit and up the borehole.

4,285,410

BROACH FOR INCORPORATION IN A DRILL STRING

Travis L. Samford, 6110 Elmgrove, Spring, Tex. 77379

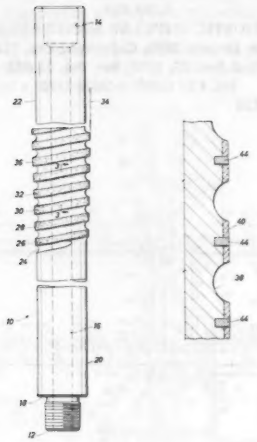
Filed Sep. 10, 1979, Ser. No. 74,159
Int. Cl.³ E21C *17/00*
U.S. Cl. 175—394 **7 Claims**

1. A broach for cutting a well bore to enlarge the opening thereof which comprises:

(a) an elongate, hollow, tubular body having threaded end connections thereon constructed in accordance with an industry standard to communicate an axial passage through said tubular body and wherein said passage is adapted to receive mudflow therethrough with said tubular body installed in a drill string; and

(b) an external thread formed on said tubular body, said external thread incorporating multiple helical turns around said tubular body wherein the lowermost turn is larger in diameter than the diameter of said tubular member and wherein the turns thereabove are progressively larger and define a threaded taper terminating at an uppermost turn of largest diameter, the turns being comprised of a crown adjacent to a groove and the crown including an outer exposed face made of hardfacing material across at least a portion of the outer face, said crown and said hardfacing material defining a plurality of insert recesses extending to a substantial depth within said crown, and said external thread further including periodically placed inserts located within said insert recesses and extending through said hardfacing material and having a major portion thereof positioned beneath said hardfacing mate-

rial, and inserts having an exposed outer surface in the outer face wherein said inserts are formed of a hardfacing material and said inserts are located at spaced locations along the crown of said thread.



4,285,411

ELECTRONIC WEIGHING APPARATUS

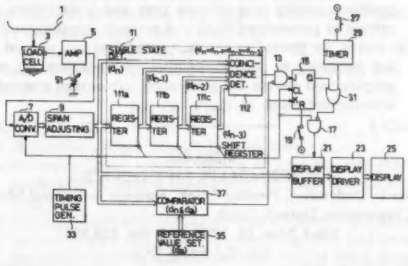
Masamichi Hino, 9-3, Aoyamadai 2-chome, Suita-shi, Osaka-fu, and Seiichi Itani, 22-407, Shinkanaoka-cho 3-1, Sakai-shi, Osaka-fu, both of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Nov. 21, 1979, Ser. No. 96,540

Claims priority, application Japan, Mar. 14, 1979, 54-30269; Jun. 5, 1979, 54-71015

Int. Cl.³ G01G *19/44*

U.S. Cl. 177—25 **16 Claims**



1. An electronic weighing apparatus employing a strain gauge type load cell and digital display, particularly applicable as a live body scale for babies and other live load articles whose movement changes the displayed body or article weight, comprising article placement means for placement of an article being weighed, analog signal generating means operatively coupled to said article placement means and responsive to the weight of an article being placed on said article placement means for generating an analog signal representative of the measured weight of said article, digital data generating means responsive to said analog signal from said analog signal generating means for generating digital data associated with said analog signal and thus the weight of said article, digital data storing means operatively coupled to said digital data generating means for storing said digital data, digital data display means responsive to said digital data stored in said digital data storing means for sequentially displaying in a digital manner the measured weight of said article, stable state detecting means operatively coupled to at least one of said analog generating means and said digital data generating means and responsive to at least one of said analog signal and said digital data for sampling said digital data at predetermined intervals of time, comparing the digital data from successive intervals, and determining that said article placement means has reached for the first time a substantially stable state after said article is placed on said article placement means, display maintaining means responsive to the output of said stable state detecting means for arresting the sequential display of digital data and for maintaining the data being displayed by said display means at said weighed value obtained when said stable state was determined in spite of movement of the body or article being weighed causing a variation in the measured weight sampled by said stable state detecting means, detecting means operatively coupled to at least one of said analog signal generating means and said digital data generating means for detecting that at least one of said analog signal and said digital data has become smaller than a predetermined value after said stable state detected output has been determined, and releasing means responsive to the detected output of said detecting means for releasing said display maintaining state by said display maintaining means.

4,285,412

SCALE PROTECTED AGAINST THE INGRESS OF DUST AND WATER

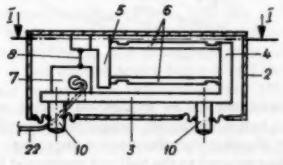
Johannes Wirth, Zurich, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

Filed Mar. 31, 1980, Ser. No. 135,677

Claims priority, application European Pat. Off., Mar. 10, 1980, 80101189.1

Int. Cl.³ G01G *21/02, 21/28*

U.S. Cl. 177—179 **5 Claims**

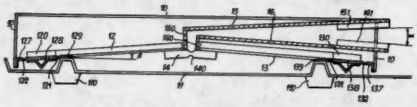


1. In a scale protected against the ingress of dust and water a measuring system, a frame, at least one foot supporting said frame, a load support, guiding means for parallel and vertical guiding of said load support, at least one opening having an inner edge in said load support for said foot, an annular diaphragm mounted between said foot and said inner edge, said load support enclosing completely said measuring system, said frame and said guiding means.

4,285,413
LOAD RECEIVER WITH BEAM HAVING ELASTIC FLECTION

Gilbert V. Dauge, Lagny, and Jacques F. Langlais, Coudray Monteraux, both of France, assignors to Testut-Aequitas, Paris, France

Filed Apr. 28, 1980, Ser. No. 144,361
Claims priority, application France, May 7, 1979, 79 11457
Int. Cl.³ G01G *3/14, 21/08*
U.S. Cl. 177—210 C **9 Claims**

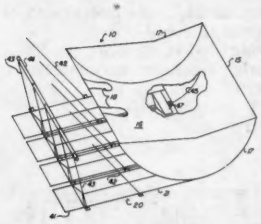


1. A weighing device comprising an upper load-carrying plate, a lower bearing plate, and a mechanism cooperating with these two plates to produce an indication relative to the load on the load-carrying plate, said mechanism comprising flection members and hinge means to transform the force due to a load on the load-carrying plate into two bending moments applied at the ends of the flection members, the hinge means comprising two parallel double hinges, mounted at a distance from each other, each being between the load-carrying plate and the bearing plate, the flection members comprising a rigid bridge provided with an elastic central zone, and of which the ends are respectively connected to the intermediate parts of the two double hinges, and the mechanism also comprising two arms respectively connected rigidly by one of their ends to the bridge on each side of its central part, and also two capacitor plates supported by the said arms and able to define at least one capacity as a function of the load applied on the load-carrying plate.

4,285,414
SUPPORTED MEMBRANE PLANER FOR SES SEALS

Alexander Malakhoff, Arlington, Va., and Sydney Davis, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1979, Ser. No. 99,151
Int. Cl.³ B60V *1/04*
U.S. Cl. 180—126 **11 Claims**



1. A seal structure for an air cushion marine vessel of the type having a hull with spaced, depending sidewalls for forming a plenum chamber therebetween, comprising:

a flexible bag secured to the hull and positioned between the sidewalls to form an expansible chamber and said bag being resiliently responsive to fluid pressure changes exerted thereon;

a plurality of elongated, juxtaposed planer members positioned between the spaced sidewalls in cooperative relationship with said bag for substantially closing-off the space between an end of the hull and the water surface;

each said planer member comprising an elongated shell portion having spaced longitudinal edge portions and a flexible membrane portion secured to said longitudinal edge portions to form a planing surface;

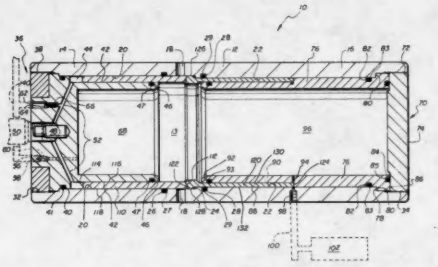
means for interconnecting said planer members along their adjacent longitudinal edge portions; and

means for supporting said planer members in cooperative relationship with said bag so that the opposite end portions of said planer members are supported for fore and aft movements with respect to the hull of the vessel.

4,285,415
ACOUSTIC IMPULSE GENERATOR

John L. Paitson, Drawer 2600, Galveston, Tex. 77552

Filed Jun. 25, 1979, Ser. No. 51,403
Int. Cl.³ G01V *1/137, 1/38*
U.S. Cl. 181—120 **22 Claims**



1. A device for instantaneously producing the release of a pressurized fluid for generating controlled acoustic impulses comprising:

(a) a body portion defining a hollow, enclosed chamber communicating with the environmental exterior via an exhaust port;

(b) a first piston member slidably mounted with respect to said body portion shiftable between
a first position closing said exhaust port and
a second position opening said exhaust port;

(c) a second piston member slidably mounted with respect to said body portion shiftable between
a first position opening said exhaust port, and
a second position closing said exhaust port;

(d) means for introducing compressed fluid into said body chamber;

(e) means for causing said first piston member to move from its first position to its second position, opening said exhaust port and thereby controllably releasing a volume of pressurized fluid creating an acoustic impulse;

(f) means for causing said second piston member to move immediately thereafter from its first position to its second position, closing said exhaust port and interrupting said release of pressurized fluid and acoustic impulse; and

(g) means for thereafter returning said first and second piston members to their respective first positions so as to prepare said device for generating subsequent controlled acoustic impulses.

4,285,416
WHEELCHAIR LIFT DEVICE

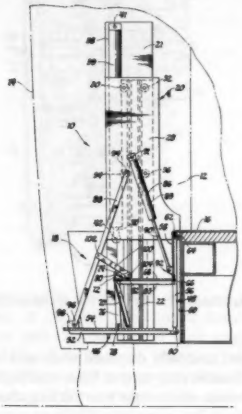
Peter P. Dudynskyj, Pontiac, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 10, 1980, Ser. No. 128,555
Int. Cl.³ B66B *9/20*
U.S. Cl. 187—9 R **4 Claims**

1. A wheelchair lift unit of the type having a swingable subframe section carried for rotation about a horizontal axis at its top edge and a horizontal subframe section carried for guided horizontal orbiting movement and linked to the lower

edge of said swingable subframe section at its inboard edge for relative movement about a horizontal axis, and wherein the swingable subframe section when in a pendulous vertical position defines an upper riser portion and locates the unit in step configuration and when in its horizontal position locates the unit in platform configuration, the outboard edge of the horizontal subframe section being held horizontal by a guide link supported for pivotal movement about a horizontal axis at its upper end and pivoted to the horizontal subframe section at its lower end whereby the horizontal subframe section defines both a lower step portion and a platform portion; the improvement comprising:

an upper step member hinged at its inboard end to the upper riser portion of the swingable subframe section for rotation about a horizontal axis;



a lower riser member hinged to the outboard end of the upper step member;

a support link connected to the upper step member and to the horizontal subframe section whereby as the swingable subframe section is shifted from a vertical to a horizontal position the upper step member folds down into horizontal alignment with the swingable subframe section and completes the platform in conjunction with the swingable and horizontal subframe sections; and

crank means attached to the lower riser member and connected to said guide link so as to tuck the lower riser member backwardly and underneath the upper step member when the swingable subframe section swings to the horizontal position.

4,285,417

FLOATING CALIPER DISC BRAKE

Fritz Ostwald, Buchschlag, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,789

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856108

Int. Cl.³ F16D *65/02*

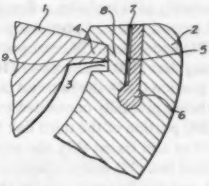
U.S. Cl. 188—73.3 **5 Claims**

1. A floating caliper disc brake comprising:

a stationary brake support having at least one straight-line guide groove therein spaced from an outer surface of said support;

a floating caliper axially slidable with respect to said support having at least one projecting part engaging said groove for axially guiding said caliper, said caliper being capable of an elastic displacement transversely of said groove due to action of a braking torque acting on said caliper; and

a slot disposed in said support spaced from and transverse to said groove extending from said outer surface of said support to a point below said groove to render said support in the area between said groove and said slot elastically deformable around a bending axis extending parallel to said groove at a distance from force vectors of said braking torque, said elastically deformable area rendering



the sliding of said caliper in said groove substantially resistant to dirt and corrosive media by dislocating the points of contact between said projecting part and said groove due to said braking torque.

4,285,418

FRICTION COUPLING CONTROL SYSTEM

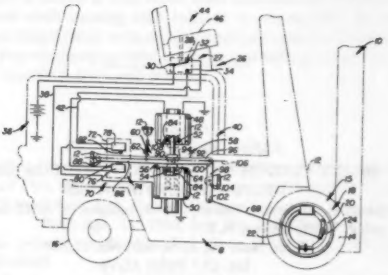
John C. Paine, North Olmsted, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US80/00017, § 371 Date Jan. 7, 1980, § 102(e) Date Jan. 7, 1980

This PCT application filed Jan. 7, 1980, Ser. No. 116,742

Int. Cl.³ F16D *65/34*

U.S. Cl. 188—109 **9 Claims**



1. A friction coupling control system (8) having a frame (12), a friction coupling (18) mounted on said frame (12) and being movable between an engaged (15) and disengaged (17) position, comprising:

a control device (26) movable between a first position (27) corresponding to a friction coupling engaged position (15) and a second position (29) corresponding to a friction coupling disengaged position (17);

power means (40) for moving the friction coupling (18) to said engaged position (15) in response to said control device being at said first position (27), and for moving the friction coupling to said disengaged position (17) in response to said control device being at said second position (29), said power means (40) includes first (48) and second (50) solenoids each having a plunger (52,54), said solenoids being positioned a predetermined spaced apart distance from one another and in a plunger facing relationship;

means (70) for deactivating said power means (40) at the engaged (15) and disengaged (17) positions of the friction coupling (18);

means (60) for releasably maintaining said friction coupling (18) at the engaged (15) and disengaged (17) position;

said maintaining means (60) includes a linkage assembly (62) being movable between first (64) and second (66) over center positions, said friction coupling (18) being connected to said linkage assembly (62) and movable to said

engaged position (15) in response to said linkage assembly (62) being moved to said first over center position (64) and movable to said disengaged position (17) in response to said linkage assembly (62) being moved to said second over center position (66);

said linkage assembly (62) includes a first link (86) having first (88) and second (90) end portions, a second link (92) having first (94) and second (96) end portions and a third link (98) having first (100) and second (102) end portions and a middle portion (104), the first end portion (88) of the first link (86) being pivotally connected to said frame (12), the middle (104) portion of the third link (98) being pivotally connected to said frame (12), the second end portion (102) of the third link (98) being connected to said friction coupling (18), and the first end portion (94) of the second link (92) being pivotally connected to said second end portion (90) of said first link (86) and the second end portion (96) of the second link (92) being connected to the first end portion (100) of said third link (98), a plane (106) extends through the first end portion (88) of the first link (86) and the second end portion (96) of the second link (92), and between the first (48) and second (50) solenoids, said plane (106) being closer to one of the solenoids than the other; and

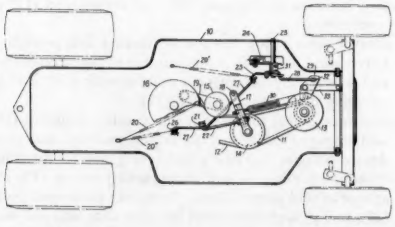
said plungers (52,54) being controllably movable between a retracted position and an extended position, said plungers (52,54) being of a construction sufficient for moving the first (86) and second links (92) through said plane (106) in response to movement of either one of said plungers (52,54).

4,285,419

BRAKE CLUTCH RELEASE CONTROL FOR BELT DRIVEN RIDING MOWERS

Lehman E. Anderson, Ankeny, Iowa, assignor to AMF Incorporated, White Plains, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,888
Int. Cl.³ F16D *13/76*
U.S. Cl. 192—11 **2 Claims**



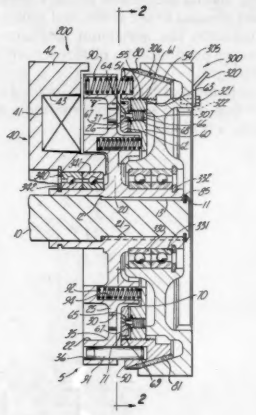
1. In a belt driven riding lawn mower having solely a hand operated clutch for said belt drive and solely a foot operated brake for braking said mower, the improvement of structure for automatically disengaging said clutch at all speeds of said mower upon operation of said foot brake, said structure comprising linkage means having lost motion interconnecting said foot brake and clutch, said linkage means comprising a chain of three pivotally connected links, one end of said chain being connected to said foot brake and the other end of said chain being connected to said clutch, and said lost motion comprising a slot at the pivotal connection between two of said links.

4,285,420

AIR GAP ADJUSTER FOR ELECTRIC CLUTCHES

Thomas C. Sekella, Elmira, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Jul. 23, 1979, Ser. No. 59,931
Int. Cl.³ F16D *13/75, 27/10*
U.S. Cl. 192—84 C **11 Claims**



1. An electromagnetic device for transmitting torque comprising:

input means;

output means coaxially disposed with said input means;

means for transferring torque from said input means to said output means, said torque transferring means further comprising:

an adjustable friction ring member disposed adjacent to said output means and interposed said input and output means;

an inner body member interposed said friction ring and said input means, said inner body member coaxially disposed with said friction ring member;

means for attaching said inner body member to said friction ring member for rotational movement therewith; and

biasing means, interposed said friction ring member and said inner body member, for engaging said friction ring member to said output means;

means for electromagnetically actuating said torque transferring means, said actuating means disposed with respect to said inner body member to form a circuitous flux path therewith, said actuating means further comprising:

a magnetic armature member concentrically disposed with said friction ring member;

an adjuster plate member concentrically disposed with said friction ring member and mounted for rotation with said magnetic armature member;

means for mounting said adjuster plate member to said friction ring member;

means for moving said adjuster plate member and said armature with respect to said inner body member when said electromagnetic means is engaged so that a circuitous flux path is formed between said armature and said inner body thereby causing the friction ring to disengage the output means; and

means for axially adjusting said armature relative to said inner body member whereby said armature is axially adjusted free of requiring complete disassembly of said device, said adjusting means forming a predetermined axial air gap between said armature and said inner body member so that when said electromagnetic means is de-energized, said biasing means causes said friction ring to engage said output means and so that when said

electromagnetic means is energized by a predetermined voltage level applied to said electromagnetically actuating means, said friction ring is caused to disengage said output means.

4,285,421

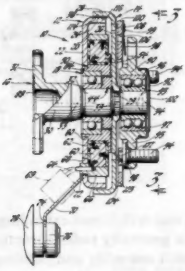
ELECTROMAGNETIC CLUTCH

Edwin H. Halsted, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 13, 1979, Ser. No. 93,182

Int. Cl.³ F16D *27/10*

U.S. Cl. 192—84 C **3 Claims**



1. A compact, readily assembled electromagnetic clutch comprising a pair of cup-like sheet metal housing members facing each other and overlapping at their respective outer peripheries in a manner to form an outer radial air gap and spaced from each other to form a cavity, one of said housing members being adapted for installation on a shaft in driving relationship thereto, an electromagnetic coil in said cavity, an armature adjacent to one of said housing members and operative upon energization of said coil to interconnect said armature and said one of said housing members in driving relationship, a bearing affixed with respect to the other of said housing members so that the housing members may rotate relative to each other, and means for locating said housing members with respect to each other to provide an axial air gap and to control the flux transfer area of said outer radial air gap, said means including a first spacer interposed in engaging relationship between said one housing member and said bearing to locate said housing members axially with respect to each other, and a second spacer engaging said bearing and the other of said housing members to locate said other housing member with respect to said bearing and to locate the periphery of said other housing member with respect to the periphery of said one housing member when said one housing member is installed on said shaft, and both of said spacers cooperating with each other and said bearing to space said second spacer from said one housing member to form said axial air gap directly therebetween and additionally form an inner radial air gap directly between said spacers in parallel with said axial air gap.

4,285,422

CENTRIFUGALLY OPERATED CLUTCH AND VARIABLE RATIO TORQUE MULTIPLIER

Arthur P. Bentley, P.O. Box 1952, Roswell, N. Mex. 88201

Filed Jun. 25, 1979, Ser. No. 51,535

Int. Cl.³ F16D *23/00*

U.S. Cl. 192—105 B **9 Claims**

1. A centrifugally operated clutch and variable ratio torque multiplier comprising;

(a) a rotatably drivable input shaft;

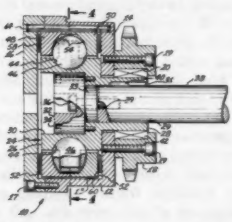
(b) a disc affixed for rotation with said input shaft and having a plurality of radial sockets formed in equally spaced increments in the periphery thereof, each of the sockets being open on diametrically opposed sides with the opening in a line parallel with the rotational axis of said disc;

(c) a ball radially movable in each of the sockets of said disc;

(d) a housing journaled for rotation about said input shaft and having a chamber in which said disc and said balls are located, said housing having opposed end walls;

(e) power output means fast for rotation with said housing;

(f) a pair of ring-shaped races axially movable in the chamber of said housing and fixed for rotation with said housing, said races concentric with said disc and on opposite sides of said balls, said races cooperatively defining an



annular groove in which said balls are movable upon rotation of said input shaft; and

(g) biasing means in the chamber of said housing for yieldingly urging said races toward each other so that said balls will roll freely in the annular groove of said races to cause zero rotational output of said housing when said input shaft is driven at low RPM with increased RPM of said input shaft causing said balls to move radially due to centrifugal force with such movement causing an increase in frictional engagement between said balls and said races to rotatably drive said housing.

4,285,423

CLUTCH DISC ASSEMBLY

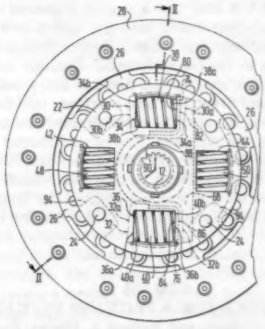
Kurt Fiidler, Niederwerrn, and Karl-Heinz Werner, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 11, 1980, Ser. No. 139,476

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1979, 2916868

Int. Cl.³ F16D *3/14*

U.S. Cl. 192—106.2 **17 Claims**



1. In a clutch disc assembly, especially for motor vehicles, comprising: a hub unit having an axis, said hub unit including a hub and a hub disc fixed on said hub in a position perpendicular to said axis, at least one first hub disc window extending circumferentially relative to said hub axis with oppositely positioned first and second terminal edges extending generally radially of the hub axis being provided in said hub disc; a cover

unit mounted on said hub unit for angular movement about said hub axis between a neutral angular position and respective terminal angular positions on opposite sides of said neutral angular position, said cover disc unit including two cover discs, each cover disc being positioned on an opposite side of said hub disc, lining carrier means being provided on one of said cover discs, at least one first cover disc window extending circumferential relative to said hub axis with oppositely positioned first and second terminal edges extending generally radially of the hub axis being provided in each of said cover discs, said first cover disc windows of said two cover discs being axially aligned with each other and in overlapping relation with said first hub disc window; at least one first compression spring extending in the circumferential direction relative to the hub axis with oppositely directed first and second ends extending generally in the radial direction relative to said hub axis being housed within said first hub disc window and said first cover disc windows with said first end adjacent said first terminal edges and said second end adjacent said second terminal edges, said first compression spring functioning as torsion spring means operatively interconnecting said hub unit and said cover disc unit, said torsion spring means resisting angular movement from said neutral angular position toward said terminal angular positions; friction damping means damping said angular movement of said cover disc unit with respect to said hub unit, said friction damping means including a control disc mounted on said hub unit for angular movement about said hub axis; a first friction unit operatively interposed between said control disc and said cover disc unit, said first friction unit providing a damping torque having a first torque value; a second friction unit operatively interposed between said control disc and said hub unit, said second friction unit providing a damping torque having a second torque value different from said first torque value; a first abutment member being provided on said control disc, said first abutment member having a spring abutment face and an edge abutment face, said spring abutment face facing in the circumferential direction around said hub axis toward said first end of said first compression spring; the improvment which includes, that the circumferential extent of said first hub disc window is different from the circumferential extent of said first cover disc windows; that the circumferential extent of said first compression spring is—seen in said neutral angular position—substantially equal to the circumferential extent of the shorter one of said first hub disc window and said first cover disc windows in the circumferential direction around said hub axis; that said edge abutment face of said first abutment member faces the first terminal edge of the longer one of said first hub disc window and said first cover disc windows in the circumferential direction around said hub axis; that a second abutment member is provided on said control disc having a spring abutment face and an edge abutment face; that a further first compression spring extending in the circumferential direction around said hub axis is located in another said first hub disc window and in another pair of said first cover disc windows, said further first compression spring having oppositely directed first and second ends, that said spring abutment face of said second abutment member faces the second end of said further first compression spring and said edge abutment face of said second abutment member faces the second terminal edge of the longer one of said another first hub disc window and another first cover disc windows.

4,285,424

LOCKING DEVICE FOR A FRICTION TYPE CLUTCH

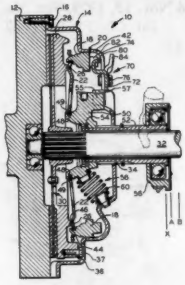
William H. Sink, Auburn, and Richard A. Flotow, Fort Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 896,290, Apr. 14, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,921

Int. Cl.³ F16D *13/75*

U.S. Cl. 192—111 B **1 Claim**

1. A rotatable clutch assembly including a drive member, support means secured to the drive member, a clutchable driven member, means for clutching the driven member to the drive member, adjusting means supporting the clutching means and connected to the support means for relative rotative movement, and a manually adjustable locking device interconnecting the support means and the adjusting means to militate against any relative rotational movement therebetween, said locking device comprising: a unitary structure including an attaching plate portion defining a first panel, detent means extending inwardly of said plate portion interconnectable with



the adjusting means, and arm means extending outwardly from said plate portion in a generally radial direction from the rotational axis of the clutch assembly and defining a second plane displaced from said first plane, said arm means providing additional mass to said locking device to effect balancing of the clutch assembly to militate against vibration of the associated clutch assembly during rotational movement thereof; and means for attaching said plate portion of said unitary structure to the support means.

4,285,425

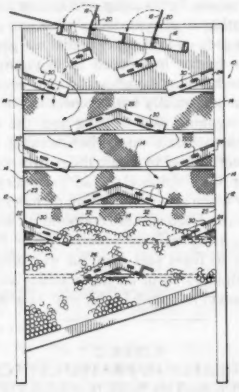
STEPPED BAFFLE STORAGE BIN

George L. Smith, P.O. Box 2153, Sanford, Fla. 32771

Filed Aug. 13, 1979, Ser. No. 66,492

Int. Cl.³ B65G *11/20*

U.S. Cl. 193—27 **1 Claim**



1. A storage bin for citrus fruit and the like, comprising:

a housing having an opening at the upper extremity thereof for gravity feeding said articles into said housing:

a first set of baffles in said housing spaced away from one side thereof and each baffle of said first set sloping downwardly toward an opposing side;

a second set of baffles in said housing spaced along said opposing side, each baffle of said second set extending downwardly and terminating short of said one side;

a third set of baffles, each baffle of said third set sloping downwardly and extending across said housing and interposed between an adjacent pair of said first and second baffles below said adjacent baffle pair at a point permitting each third baffle to receive the flow of fruit or the like from the end of the adjacent first and second baffle pair;

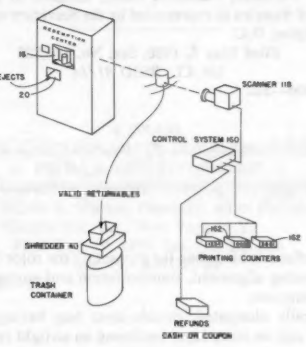
each baffle of said first, second and third baffle set formed of plural, substantially parallel steps, each step being spaced from adjacent steps a distance which permits said citrus fruit to pass therebetween, so as to permit said fruit to occupy the volume underneath said baffles.

4,285,426

CONTAINER REDEMPTION APPARATUS AND PROCESS

John W. Cahill, Yorktown Heights, N.Y., assignor to PepsiCo Inc., Purchase, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,437
Int. Cl.³ G07F 7/06
U.S. Cl. 194—4 C **21 Claims**



5. A redemption system for accepting the return of selected types of containers and for compensating the customer for the deposit therein of accepted containers, comprising:

(a) an open carousel including a turntable in which a returnable container is adapted to be positioned with a code thereon facing radially outwardly from the carousel;

(b) scanning means positioned adjacent said carousel for scanning the code markings on the container as the carousel rotates the radially outwardly directed markings past the scanning means;

(c) means responsive to the output of said scanning means for selectively accepting or rejecting the container; and

(d) a plurality of counters, one for each distributor of an acceptable type of container, whereby each counter maintains a record of the number of returned acceptable containers of the type monitored by that counter.

4,285,427

FOLDING SHIRT CARD AND BLANK THEREFOR

George Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Nov. 15, 1979, Ser. No. 94,493
Int. Cl.³ B65D 85/18; A41H 5/00
U.S. Cl. 206—292 **7 Claims**

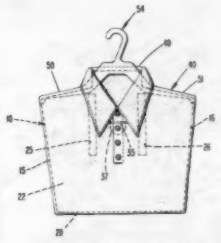
1. A shirt card for supporting a shirt having a body portion with a collar at the top, a tail at the bottom and two sleeves at the sides, comprising:

a main panel having a top edge, a bottom edge, a first side edge and a second side edge forming the periphery thereof;

a fold line extending between said side edges dividing said main panel into a top section and a bottom section, the body portion of the shirt overlying said top and bottom sections;

means, in said top section, for receiving the sleeves of the shirt;

means, located in said bottom section, for receiving the sides



of the shirt; said means including a pair of slits extending from the interior of said bottom section to the outer periphery thereof, and

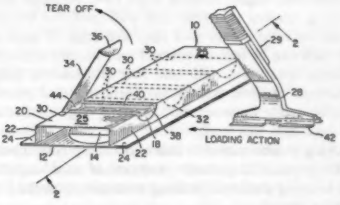
means, located in said top section and in said bottom section, for locking said sections together upon folding thereon about said fold line.

4,285,428

RAZOR CARTRIDGE DISPENSER

Edward A. Beddall, Fairfield, and Bryan J. Goddard, North Branford, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 718,258, Aug. 27, 1976, abandoned.
This application Feb. 6, 1978, Ser. No. 875,651
Int. Cl.³ B65D 83/10
U.S. Cl. 206—354 **9 Claims**

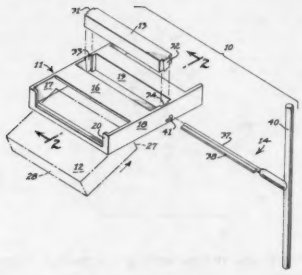


1. A cardboard dispenser for razor cartridges of a type having coupling means for engagement with a razor handle having complementary coupling means comprising a substantially rectangular tubular container having a succession of partitioned compartments within, each of the compartments dimensioned to receive and support the entirety of one of the razor cartridges, the container including an integral cover member having a median wall and two depending side walls, a base member wall affixed to the side walls having a plurality of tabs struck therefrom and extending interiorly of the container for partitioning the compartments, and a plurality of tear strips integral with the cover member normally covering at least a portion of the median wall and one of the contiguous side walls of each of the compartments, the tear strips being manually removable to provide access to the coupling means on the cartridges, thereby providing for removal of the cartridges from the container after engagement with the razor.

4,285,429
TAPE CASSETTE SECURITY CONTAINER

William D. MacTavish, 309 Sequoya Dr., Hopkinsville, Ky. 42240

Filed Feb. 4, 1980, Ser. No. 118,525
Int. Cl.³ B65D 85/67; A45C 13/10; E05B 65/52
U.S. Cl. 206—387 8 Claims



1. A security device for receiving and displaying a cassette, comprising:

(a) a housing for receiving a cassette having a longitudinal dimension and a transverse dimension,

(b) said housing having opposed front and rear walls, longitudinally spaced opposed end walls, and transversely spaced opposed first and second side walls,

(c) an entry opening in said front wall having a length slightly greater than the longitudinal dimension of the cassette to be received in said housing,

(d) said opening having opposed edges spaced apart widthwise less than the transverse dimension of the cassette to be received in said housing,

(e) a first ledge between one edge of said opening and said first side wall,

(f) a second ledge between the opposite edge of said opening and said second side wall,

(g) said opposed side walls being spaced apart a distance sufficiently greater than the transverse dimension of said cassette to permit the cassette to be inserted widthwise at a transverse angle, leading edge first, through said entry opening toward said first side wall until the trailing edge of the cassette clears said opposite edge of said opening and then can be moved toward said second wall until said cassette rests upon both said first and second ledges in a contained positon within said housing and providing a locking space between said leading edge of the cassette and said first side wall,

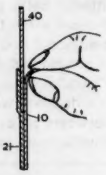
(h) locking means movable into a locking position within the locking space to prevent removal of said cassette from said housing until said locking means is removed from said locking space.

4,285,430
SKIN PACKAGE

Alan Caunt, Leeds, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Nov. 30, 1979, Ser. No. 98,822
Claims priority, application United Kingdom, Jan. 26, 1979, 02891/79
Int. Cl.³ B65D 73/00
U.S. Cl. 206—471 3 Claims

1. An air-free skin package consisting of an article enclosed between a generally flat bottom layer of thermoplastic film having a dimpled surface contacting said article and a top layer of thermoplastic film having a domed portion accommodating said article, said layers being heat sealed together in a zone immediately surrounding the entire perimeter of the article and being in close and intimate contact with the entire surface of said article, said package being devoid of any weakened severance line and including, along at least one edge and disposed between said layers, a strip of material which is heat sealed to

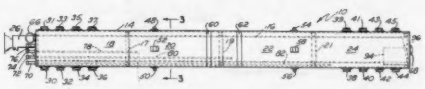


one only of said layers and extends laterally beyond the other layer so that the package may be opened by separation of the strip from the other layer.

4,285,431
INFLATABLE BLADE BAG

David L. Wickman, Stamford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1980, Ser. No. 146,855
Int. Cl.³ B65D 81/14
U.S. Cl. 206—522 9 Claims



1. An inflatable blade bag for protecting the rotor blade of an aircraft during alignment, transportation and storage thereof, which comprises:

a generally elongated, double-layer bag having an inner layer and an outer layer enclosing an airtight space therebetween;

means for mounting and demounting said double layer bag in deflated position thereof over the rotor blade;

means for inflating and deflating said double layer bag by adjusting the pressure of a gas inside said airtight space enclosed by the inner layer and outer layer of said double layer bag;

means for carrying manually said double-layer bag in inflated position thereof and enclosing the rotor blade; and

means for manipulating said double-layer bag when inflated and enclosing the rotor blade for alignment purposes.

4,285,432
PACKAGE ARRANGEMENT FOR FRAGILE ARTICLES

Paul de Villers, VaudreuilsurleLac, and Judith Barriault, Scarborough, both of Canada, assignors to Gestion Paul de Villers, Inc., VaudreuilsurleLac, Canada

Filed Dec. 7, 1978, Ser. No. 967,518
Claims priority, application Canada, Nov. 21, 1978, 316557
Int. Cl.³ B65D 81/08, 81/10
U.S. Cl. 206—591 6 Claims

1. A package arrangement comprising in combination:

a first member having a top surface defined by peripheral edges;

shock absorbing resilient cushioning material on said top surface;

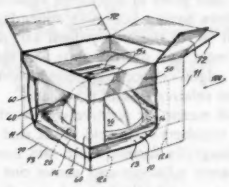
an article located on said material and positioned within said peripheral edges;

means securing said article in place on said material and said material to said first member;

a second member positioned in spaced relation to said first member and located above and spaced from said article;

a plurality of post-like members being tubular and triangular

in cross section, located intermediate said first and second members and abutting said top surface for use in maintaining said first and second members in said spaced relation; and



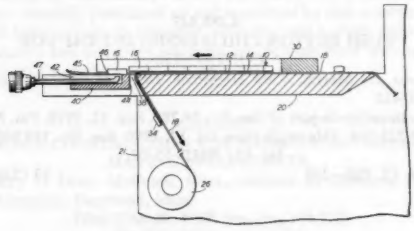
means retaining said first, second and post-like members in said relative positions, one to another.

4,285,433

METHOD AND APPARATUS FOR REMOVING DICE FROM A SEVERED WAFER

Robert W. Garrett, Sr., Reading; Donald E. Horning, Wyomissing, and Dennis L. Merkel, Hamburg, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,464
Int. Cl.³ B07C 5/34
U.S. Cl. 209—573 **7 Claims**



1. Apparatus for separating dice from a severed wafer comprising:

a first surface with an edge located thereon;

flexible adhesive material attached to the wafer and adapted to pass across said first surface and over said edge of said first surface for releasing a forward advancing edge of a plurality of dice in the wafer from said flexible adhesive material and for pulling away said flexible adhesive material from the remaining portion of said plurality of dice;

a second surface located in a spaced relationship with said edge of said first surface forming a slot therebetween and providing a support for said forward advanced edge of said plurality of dice and a receiving area for said plurality of dice after removal from said flexible adhesive material;

a dice receiving area; and

a dice transport tool for attaching to the backside of the dice and for transporting the dice to said dice receiving area;

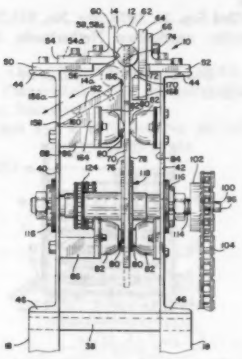
said receiving area having in said second surface a recess of sufficient size and shape to permit insertion therein of the dice transport tool for attaching to the backside of the dice.

4,285,434

WALKING-BEAM CONVEYOR WITH ADJUSTABLE WIDTH GAUGING APERTURE

Henry A. Schuricht, Pontiac, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 23, 1979, Ser. No. 32,548
Int. Cl.³ B07C 5/06; B65G 25/02
U.S. Cl. 209—625 **4 Claims**



1. A conveyor for moving objects by means of a series of successive steps wherein said objects are lifted from rest at a first point, carried forward and then returned to rest at a second point located a distance from said first point, said conveyor comprising,

a conveyor body,

a drive plate carried by said body, said plate having a centrally located first slot defined in part of spaced vertical sidewalls, and a pair of second slots located one each on each side of said first slot, each said second slot defined by a horizontal top wall spaced from a horizontal bottom wall,

a first eccentric assembly rotatively carried by said body and disposed within said first slot to interact continuously with said sidewalls of said first slot,

second eccentric assemblies rotatively carried by said body and disposed one each in said second slots to interact continuously with said top walls of each said second slot, said first and second eccentric assemblies operatively interconnected and positioned to rotate and maintain respective outermost eccentric points in like orientation during said rotation, said second eccentric assemblies having a lesser eccentricity than said first eccentric assembly so that said drive plate may rotate in a pattern having a horizontal elliptical-like configuration, and

a stop plate carried by said body below a guide path of said conveyor defined by a guide angle and a guide plate, said stop plate having an end wall located a selective distance from said guide plate to provide a space for said drive plate to move into said guide path, engage objects held in said guide path by said stop plate and carry said objects from said first point to said second point,

said conveyor further characterized by including a sorting feature comprising, an aperture formed in one side of said conveyor body,

a slide plate having a bottom edge joined to said body immediately below a lower edge of said aperture, said plate sloped upwardly and terminating adjacent to said drive plate,

a deflection bar carried by said guide plate adjacent to said drive plate, and

said stop plate including an adjustable portion positioned to align with said aperture and having an end wall positioned to provide a clearance space for a portion of said objects

to selectively pass therethrough, engage said deflection bar and be ejected through said aperture.

4,285,435

HOLDER FOR PACKAGING, DISPLAYING AND OFFERING FOR SALE OF ARTICLES, AS WELL AS SEPARATE ASSEMBLY THEREFOR

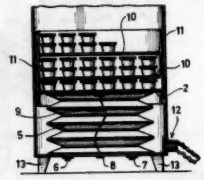
Gerardus C. Brinkers, 49 Vlamingstraat, 2711 Ad Zoetermeer, Netherlands

Filed Sep. 26, 1978, Ser. No. 945,798

Claims priority, application Netherlands, Sep. 27, 1977, 7710543

Int. Cl.³ A47F *3/022, 3/04*

U.S. Cl. 211—49 D **7 Claims**



1. A holder for packaging articles, displaying them and offering them for sale, at least one pallet unit being present in the holder adapted for carrying a number of articles or layers of articles separated by intermediate trays, the pallet unit being provided along at least a substantial portion of its periphery with an upwardly and downwardly directed rim flange, a levelling device being present by means of which the pallet unit and the articles thereon are movable up and down, together with article bearing trays which may be supported by the pallet unit, the holder comprising means for the support and convenient positioning of the filled holder said levelling device being selectively operable to move said pallet unit to a selected level and maintain said pallet unit at said selected level until operation of said levelling means by an operator to move said pallet unit to another selected level, said levelling device for moving the pallet unit up and down together with any trays which may be supported on said pallet comprising an inflatable hollow body below the pallet unit provided with a valve and a pressure safety valve.

4,285,436

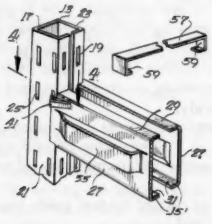
INTEGRAL LOCKING TAB FOR STORAGE RACKS

Anthony N. Konstant, Mount Prospect, and John J. Weider, Arlington Heights, both of Ill., assignors to Speedshelf International, Inc., Skokie, Ill.

Filed Dec. 26, 1978, Ser. No. 973,742

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—192 **3 Claims**



1. A rack structure for supporting items at different vertical levels which incorporates

vertical posts each having two vertical rows of narrow vertical slots at predetermined locations,

longitudinal metal support members each including an integrally formed connector located at the end of a longitudinally-extending vertical wall portion that joins said members to said posts in supported relationship thereon, said connectors having hook-like appendages which are bent at about 90° to the longitudinal axis of said member and which enter said narrow slots and interengage with the bottom edges thereof upon downward movement of said members relative to said posts, and

locking tab means for positively preventing disengagement of said members from said posts, said locking tab means being integrally formed from said member at a location immediately adjacent and above one of said connector appendages, said tab means being displaceable into the upper region of said narrow slot wherein said adjacent connector appendage is received following downward movement of said connector to thereby block disengagement of said member from said post until said locking tab means is first withdrawn and to thus lock said member to said post, said locking tab means having a tapered head portion and a root portion, said head portion having an upper edge which slants upward from a narrow end portion that first enters said slot and being oriented at about 90° to said root portion, said root portion being displaced from said vertical wall portion of said support member and said head portion of said tab means being offset from vertical alignment with said adjacent connector appendage before said tab is moved to locking position, and said root portion being joined to the remainder of said member along a generally vertical line so that said tab means moves in a generally horizontal plane as it is displaced into locking position, whereby said upper slanting edge engages the upper edge of said narrow slot and effects camming movement as a result of movement relative to said post.

4,285,437

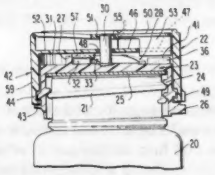
PUSH BUTTON CHILD-RESISTANT CAP FOR CONTAINERS

Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415

Continuation-in-part of Ser. No. 74,780, Sep. 12, 1979, Pat. No. 4,223,794. This application Jul. 17, 1980, Ser. No. 169,840

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—220 **13 Claims**



13. A push button child-resistant cap for containers comprising inner and outer relatively rotatable cap sections, the inner cap section being screw-threaded to engage container screw-threads, the inner cap section having circumferentially spaced first and second stage tightening surfaces thereon and an unscrewing surface, at least one tightening lug on the outer cap section engageable at least with the first stage tightening surface of the inner cap section during relative rotation between the two cap sections, said tightening lug being adapted to escape over the first stage tightening surface following a certain build-up of resistance to cap tightening, a depressable push button element on the outer cap section including a drive lug adapted to engage the unscrewing surface of the inner cap section while the push button element is depressed to cause

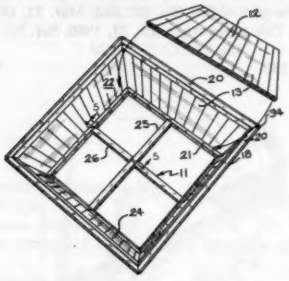
unscrewing of the inner cap section, and camming means on the inner cap section engageable with said drive lug to elevate the push button element during tightening rotation of the cap.

4,285,438

PALLET BOX

Hershey Wait, Lake Zurich, Ill., assignor to General Box Company, Elk Grove, Ill.

Filed Nov. 2, 1979, Ser. No. 90,537
Int. Cl.³ B65D *6/24*
U.S. Cl. 217—43 A **14 Claims**



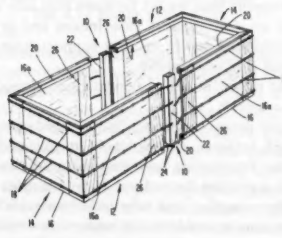
1. A pallet box comprising, in combination, a plurality of side wall assemblies joined at their adjacent vertical edges to form an enclosure, a bottom liner assembly comprising cleats mounted adjacent the lower perimeter edges of said joined side wall assemblies, said cleats defining a plurality of bearing recesses, a bottom support assembly having finger members extending outwardly therefrom, said finger members being received by said bearing recesses defined by said cleats, and a floor assembly positioned on and supported by said cleats and said bottom support assembly, whereby said bottom support assembly and said floor assembly can be assembled with said side wall assemblies without the use of nails.

4,285,439

WALL CONSTRUCTION FOR WIRE-BOUND BOXES HAVING SPLIT CLEATS

Harry F. Dyer, McComb, Miss., assignor to American Box Company, Fernwood, Miss.

Filed Dec. 26, 1979, Ser. No. 106,922
Int. Cl.³ B65D *6/28, 6/36*
U.S. Cl. 217—45 **14 Claims**



1. An improvement in the construction of wire-bound containers, wherein the walls of the container include rectangular panels bound together in opposing edge relationship by wires normal to the opposing edges, the panels having cleats of like thickness forming at least a portion of the edges of said panels normal to the opposing edges, said improvement comprising:

a set of two successive panels arranged in the same plane; and

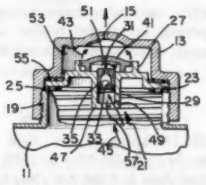
an auxiliary support member having the same thickness as the cleats inserted between the opposing edges of said successive panels, the lengths of said cleats of each of the successive panels being determined for clamping said support member between the opposing ends of the cleats of the successive panels under the normal tension of the wires binding the panels of the wire-bound container together.

4,285,440

SPILL AND SPIT RESISTANT FUEL CAP

Gar M. Adams, Elkhart Lake, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Apr. 9, 1979, Ser. No. 28,714
Int. Cl.³ B65D *51/16*
U.S. Cl. 220—202 **6 Claims**



1. In combination with a removable fuel reservoir filler cap having a small generally centrally disposed air admitting aperture for venting the reservoir to generally balance the rate of decrease in fuel volume and the rate of increase of air volume within the reservoir, a check valve positioned intermediate a cap inner surface and an annular gasket seated in the cap with the gasket and check valve in turn captured between the cap inner surface and the fuel reservoir filler when the cap is in the reservoir filler closing position; the check valve comprising a generally disc-like support, an elongated valve cavity member carried by the support and having openings near opposite ends thereof, a valve member captive within the valve cavity member and movable therein between a position near one cavity end for closing the opening of said one cavity end and a position near the other cavity end whereby the cavity and valve member cooperate to allow air to enter the reservoir while precluding the rapid egress of material from the reservoir; a first baffle disposed intermediate the aperture and the check valve and carried by said support to obstruct direct material flow paths between the check valve and the aperture and provide bidirectional circuitous flow paths only between the check valve and the aperture; a second baffle formed by said support with a passage opening spaced below said valve cavity member, air entering the reservoir along a path defined in order by the aperture, the first baffle, the check valve, the second baffle and into the reservoir to thereby reduce the probability of liquid fuel being expelled from the aperture.

4,285,441

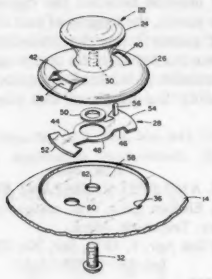
VENTABLE STEAM COVER FOR CULINARY VESSELS

Stephen A. Ziskind, New York, N.Y., assignor to Foxy Products, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 121,057, Feb. 13, 1980. This application May 23, 1980, Ser. No. 152,641
Int. Cl.³ B65D *51/00, 51/16*
U.S. Cl. 220—231 **10 Claims**

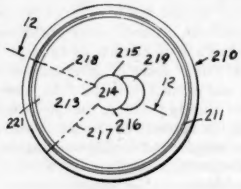
1. A ventable steam cover for a culinary vessel adapted to provide a modified enclosed atmosphere comprising cover means for defining a closure chamber having a central opening, seating means integral with said cover including an annular rim, handle assembly means including a knob portion for positioning the central opening over the vessel, said knob portion

including a flared skirt, said skirt having at least one window, an outlet orifice in said cover, said window being positioned over the outlet orifice, valve means interposed between said



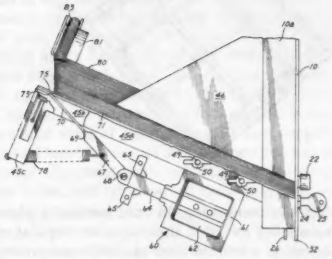
skirt and outlet orifice, said valve means being displaceable for progressively exposing the outlet orifice whereby exhaust steam and vapors can vent through the window.

4,285,442
DRINKING CUP LID
Theresa M. Wedzik, 210 Hillcrest Ave., Erie, Pa. 16509
Continuation of Ser. No. 35,629, May 3, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,842
Int. Cl.[3] B65D *41/48, 41/37*
U.S. Cl. 220—270 **1 Claim**



1. A drinking cup lid that can be fitted over the rim of a drinking cup comprising,
a circular shaped lid,
means on said lid to attach said lid to a container,
a pair of generally radially extending scored lines starting in scored first segments at the peripheral edge of the lid and extending inwardly and converging toward each other,
defining generally a pie-shaped piece and terminating adjacent the center of said lid in a second line defining an arc of a circle said second segment being completely cut through said lid connecting said lines together,
said segment at the center of the lid providing a part of said pie-shaped piece adapted to be pressed inwardly by a drinking straw,
said lines defining a pie-shaped piece of the lid defined by the scored segments and cut through segments being adapted to be removed by tearing along the scored lines providing a relatively large opening for drinking,
said scored line segments and said cut through line segments comprise one continuous line,
said cut through lines defining a circular outwardly extending section **215** adapted to be deflected inwardly by a drinking straw, said cut through section **215** extending outwardly from said lid then inwardly to said lid providing access for a user's finger nail thereunder, an inwardly extending section adjacent said outwardly extending section, said inwardly extending section terminating at the top surface of said lid, providing an efficient position for the finger nail of a person to lift said outwardly extending section whereby the finger nail of a person can be inserted under said cut through section and said outwardly extending section can be lifted by said person to remove said pie shaped piece.

4,285,443
CARD DISPENSING MODULE
Eugene P. Winans, 7795 E. Napa Pl., Denver, Colo. 80237
Continuation-in-part of Ser. No. 892,182, Mar. 31, 1978, Pat. No. 4,209,108. This application Jan. 21, 1980, Ser. No. 114,055
Int. Cl.[3] G07F *11/28*
U.S. Cl. 221—155 **7 Claims**



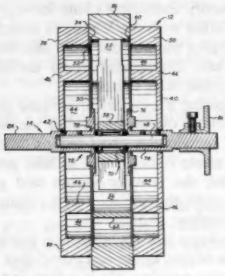
1. A modular dispenser for cards and the like comprising:
(a) face plate means arranged for attachment in an opening in a housing wall, and having depending flanges from one side forming a walled support, and said face plate means including one large advertising window and one card display smaller window, and a card eject slit;
(b) a support frame with depending upper and lower flanges arranged to seat in a portion of said walled support and be secured therein over said smaller window;
(c) side wall means adjustably secured to said support frame;
(d) card support base means sloped at an angle to said support frame, secured to said side wall means and arranged to seat adjacent said card eject slit;
(e) said card support base means being smooth for unrestricted card travel thereon, and having a central slot in the end opposite said card eject slit;
(f) a card pusher bar, of not more than the thickness of the cards to be dispensed, having a length of about the width of said support base means between said side wall means mounted on said support base means and arranged for free, uninhibited travel on said support base means between said side wall means;
(g) solenoid means mounted beneath said sloped card support base means;
(h) connector means extending through said central slot and connected between said solenoid means and said card pusher bar for moving said pusher bar to contact a card and push a portion thereof out said card eject slit;
(i) means for actuating said solenoid means;
(j) spring means secured to said support base means and to said connector means for biasing said pusher bar onto said card support base means and for returning said pusher bar to a position out of contact with a stack of cards on said support base means; and
(k) card stack presser means, pressing said stack of cards on said card support base means and toward said support frame.

4,285,444

HIGH SPEED PRECISION PLANTER

John M. Tye, P.O. Box 218, Lockney, Tex. 79241

Filed Jan. 21, 1980, Ser. No. 113,756
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—211 **16 Claims**



1. A precision planter having
a. a seed box,
b. a vacuum source,
c. a first perforated disc having a seed side and a vacuum side,
d. a housing around the disc,
e. a rotatable shaft through the housing,
f. said disc mounted on said shaft,
g. a seed reservoir on the seed side of the disc connected to the seed box,
h. a vacuum chamber on the vacuum side of the disc connected to the vacuum source,
i. a discharge chute connected to the housing and extending to an earth working implement, and
j. release means on the housing for releasing seed from the disc and into the chute;
wherein the improvement comprises:
k. a second perforated disc mounted on said shaft,
l. a seed reservoir on a seed side of said second disc,
m. a vacuum chamber on a vacuum side of said second disc, and
n. a second release means for releasing said seed from said second disc and into said chute.

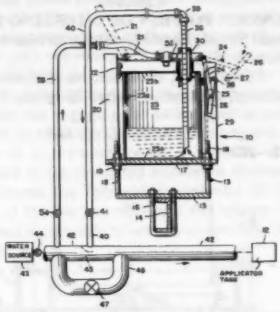
4,285,445

CONCENTRATE METERING APPARATUS

Gary L. Vander Molen, Waterloo, and Timothy A. Brown, Ames, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed May 1, 1979, Ser. No. 35,059
Int. Cl.³ B67D *5/22, 5/60*
U.S. Cl. 222—49 **26 Claims**

1. An apparatus for removing liquid concentrates from their shipping/storage containers and for mixing such concentrates with water, such containers having side and end walls, comprising a support frame for supporting a concentrate container with one end wall thereof facing upwardly, a top member movably mounted on said support frame for movement between raised and lowered positions, a piercing tube mounted upon said top member having a piercing tip adapted to engage an upwardly facing end wall of a concentrate container supported by said frame for piercing a hole in such end wall as said member is moved from its raised to its lowered positions, a rigid elongated suction tube having upper and lower ends and being telescopingly carried by said piercing tube for movement between a retracted position wherein said lower end is disposed within said piercing tube and any of a plurality of extended positions wherein said lower end is spaced selected distances below said piercing tip, conduit means connected to the upper end of said suction tube for carrying the contents of a container supported by said frame to a water supply line, and a water supply line communicating with said conduit, said



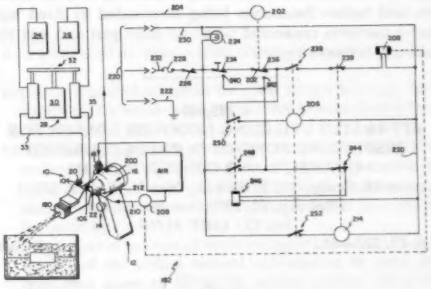
supply line including suction means for creating a suction in said conduit means and in said suction tube when water flows through said line.

4,285,446

AUTOMATIC PURGING SYSTEM HAVING A PRESSURE SENSOR AND A TIMING MECHANISM

John S. Rapp, Noblesville, and David H. Jackson, Indianapolis, both of Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed Jun. 22, 1979, Ser. No. 51,010
Int. Cl.³ B05B *7/04;* **B67D** *5/08*
U.S. Cl. 222—70 **8 Claims**



1. An apparatus for dispensing a mixture of materials, which, upon being mixed, undergo a reaction which produces a non-flowable material, the apparatus comprising means for providing flows of the materials for mixing, a housing to which the material flow-providing means is coupled, the housing including first and second valve means in communication with the flow-providing means, and a chamber from which the mixed materials are expelled from the apparatus, the first and second valve means being housed for movement between first orientations in which the first and second valve means provide a flow of the mixed materials from the chamber and second orientations halting flow of the mixed materials from the chamber, means for providing a flow of a purging medium, additional valve means for controlling flow of the purging medium, means providing communication between the additional valve means and the chamber to provide a flow of the purging medium to the chamber, means for sensing when the first and second valve means are placed in the second orientations, and timing means coupled to the sensing means to time a first interval starting when the first and second valve means are placed in said second orientations and to open the additional

valve means when the first interval reaches a predetermined non-zero duration to start the purging cycle.

4,285,447

SUSPENSION FOR BIN DISCHARGING DEVICE

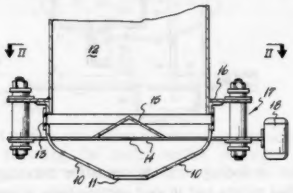
Paul Fairbank, Stroud, England, assignor to Simon-Solitec Limited, Gloucester, England

Filed Mar. 3, 1980, Ser. No. 126,849

Claims priority, application United Kingdom, Mar. 6, 1979, 07921/79

Int. Cl.³ B65G 65/44

U.S. Cl. 222—200 **10 Claims**



1. A bin-activator supported beneath a bottom outlet opening of a bin or hopper and having means for vibrating the activator to facilitate discharge of material from the bin or hopper, characterized in that the bin-activator is suspended from the bin or hopper by a plurality of hangers, each of which extends between a fixed part of the bin or hopper and the bin-activator itself, each said hanger comprising an upright rod having pivoting movement relative to said fixed part and to said bin-activator, bushes of resilient material surrounding portions of the rod near to the ends thereof and restricting the relative movement between said fixed part and said bin-activator, said bushes themselves being surrounded by fixed rigid sleeve members connected with said fixed part and said bin-activator respectively.

4,285,448

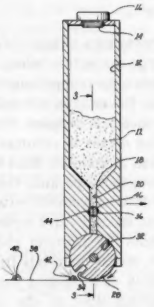
APPARATUS UTILIZING GROOVED ROLLER FOR DISPENSING POWDER IN PREDETERMINED QUANTITY AND CONFIGURATION

Spencer M. Group, 421 E. 80th St., New York, N.Y. 10021

Filed Sep. 10, 1979, Ser. No. 73,921

Int. Cl.³ G01F 11/10

U.S. Cl. 222—613 **1 Claim**



1. A refillable, manually-operated dispenser having a leak proof closure for dispensing powder in uniformly-spaced, repeated mounds upon a surface while minimizing the mixing of air with the powder as the powder impacts the surface, each of the dispensed mounds of powder being of a predetermined compact quantity and configuration, said dispenser comprising in combination:

a. a hopper for holding the powder, said hopper including a sealable aperture means for loading said hopper with powder, said hopper having a V-shaped downwardly directed bottom for directing powder under the force of gravity toward the bottom of said hopper;

b. a downwardly extending chute having an inlet in fluid communication with the V-shaped bottom of said hopper for discharging the powder from said hopper through an outlet of said chute, said chute including depressions within opposed sides thereof;

c. a roller having a cylindrical surface in wiping contact with said chute outlet, said roller including at least one groove of rectangular cross-section into which powder from said chute outlet drops as said groove passes said chute outlet, the powder within said groove dropping therefrom onto the surface upon rotation of said roller along the surface; and

d. a rod including a half-round section journalled within said depressions of said chute and coincident with said chute, said rod being positionable in a first and second position for impeding and permitting, respectively, flow of powder through said chute.

4,285,449

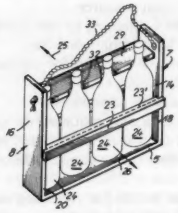
MODULE FOR HOUSING CONTAINERS AND FOR FORMING A STORING ARRANGEMENT

Pilar A. Campos, 3435 Cabildo St., Buenos Aires, Argentina

Filed Jun. 28, 1979, Ser. No. 52,755

Int. Cl.³ A47F 7/28

U.S. Cl. 294—32 **6 Claims**



1. A module for receiving containers, preferably bottles, in oriented parallel array, for their transport in vertical position and storage in horizontal position, a plurality of said modules being adapted to be stacked one above another to form a container storage arrangement, said module comprising:

(i) an elongated base having a longitudinal axis and a predetermined width as measured perpendicularly to said axis;

(ii) two substantially parallel, spaced apart, elongated lateral walls each having a longitudinal axis and each being secured by one end to each end of said base, said walls having like widths, as measured perpendicularly to the longitudinal axis thereof, which are the same as the width of said base, said walls being perpendicular to said base, thereby defining with said base a "U" shaped structure with a predetermined width defined by the width of said base and walls and having two parallel spaced apart limaginary sides each parallel to said axes;

(iii) first fixed container retaining means extending between said two walls and fully contained between the imaginary sides and parallel thereto and adapted to prevent movement of said containers, when positioned within the structure, perpendicularly to said longitudinal axes;

(iv) protruding means extending outwardly beyond one of the imaginary sides of said structure;

(v) notch means formed in said structure adjacent the imaginary side thereof opposite said protruding means for receiving the protruding means of another module when

two modules are stacked one above the other with one imaginary side of one module adjacent one imaginary side of the other module to form an arrangement having an overall width equal to the sum of the individual widths of both modules and in which the bases of said stacked modules will be coplanar, and the corresponding sides of said stacked modules are also coplanar;

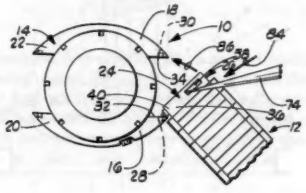
(vi) and a second container retaining means also extending between said two walls and fully contained within the imaginary sides of said structure, said second container retaining means being rotatable between a first position for preventing movement of said containers, and a second position enabling movement of said containers, when positioned within the structure, parallel to the longitudinal axes of said walls.

4,285,450

WATCH BAND PIN CONNECTOR ASSEMBLY

Mary K. Barnes, P.O. Box 692, Sulphur, Okla. 73086

Filed Feb. 25, 1980, Ser. No. 124,131
Int. Cl.³ A44C *5/18, 5/14*
U.S. Cl. 224—164 **16 Claims**



9. An improved watch band-pin connecting assembly for connecting a watch band to a watch case wherein the watch band is provided with a first and a second end, the watch case is provided with a first pair of substantially parallel, spatially disposed lug members extending from a first side portion of the watch case, and a second pair of substantially parallel, spatially disposed lug members extending from a second side portion of the watch case so as to be substantially opposite the first pair of lug members, the first pair of lug members having axially aligned sockets in facing surfaces thereof and adapted to receive therebetween the first end of the watch band, the second pair of lug members having axially aligned sockets in facing surfaces thereof and adapted to receive therebetween the second end of the watch band, the improved watch band-pin assembly comprising, in combination:

a tubular link disposed on each of the first and the second end of the watch band, the tubular link having an elongated slot formed in one side portion thereof;

a telescoping, spring-biased pin assembly positionable within each of the tubular links and engagable with the axially aligned sockets in the facing surfaces of the first and second pairs of lug members for securing the first and secnd ends of the watch band to the watch case, the telescoping, spring-biased pin assembly comprising:

a tubular housing having a closed first end, a substantially open second end, and a longitudinally disposed, elongated slot formed in a side portion thereof;

a first post member disposed on the closed first end of the tubular housing, the first post member positionable within the socket of one of the spatially disposed lug members of the watch case;

a spring disposed within the tubular housing such that the spring is supported therein by the closed first end;

an elongated member having a first end and an opposed second end, the elongated member positionable within the tubular housing such that the first end of the elongated member engages the spring, the spring biasing the elongated member so that the opposed second end of the elongated member extends a distance from the open second end of the tubular housing, the opposed second end of the elongated member positionable within the socket of the other of the spatially disposed lug members of the watch case; and

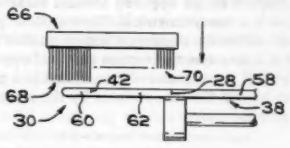
pick engaging means disposed on the elongated member for engagement with a pick such that in an assembled position the pick engaging means of the elongated pin member is alignable with the elongated slot in the tubular link and the elongated slot in the tubular housing of the pin assembly so that upon positioning the pick through the elongated slots and engaging the pick engaging means of the elongated member with the pick the elongated member is movable to a retracted position wherein the opposed second end of the elongated member is disposed substantially adjacent the opposed second end of the tubular housing of the pin assembly and the tubular link of the watch band is movable between the spatially disposed lug members.

4,285,451

METHOD OF AND APPARATUS FOR SEVERING EDGES OF A GLASS SHEET

Peter R. Ferraino, Linesville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 10, 1979, Ser. No. 102,210
Int. Cl.³ C03B *33/02*
U.S. Cl. 225—2 **9 Claims**



1. A method of severing a glass ribbon comprising the steps of:

imposing a pair of scores in the glass ribbon adjacent each edge with the score closest to the ribbon edge deeper than the remaining score;

biasing a first portion of severing means having a resilient surface and first section the ribbon toward one another to apply a biasing force against the first section to open the deeper score to sever the first section from the ribbon; followed by

biasing adjacent portion of the severing member and second section of the ribbon toward one another to open the remaining score to sever the second section from the ribbon.

4,285,452

SYSTEM AND METHOD FOR DISPERSING FILAMENTS

Imants Reba, and Edward C. Wolthausen, both of Vancouver, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 15,272, Feb. 26, 1979, abandoned. This application Aug. 20, 1979, Ser. No. 68,246
Int. Cl.³ B65H *51/00, 17/32*
U.S. Cl. 226—7 **13 Claims**

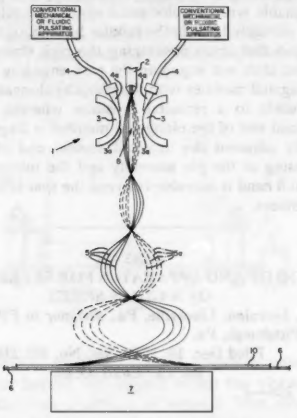
1. A method for producing a plurality of filaments in a dispersed condition, which comprises:

(a) discharging said filaments in a downward direction at high velocity;

(b) introducing said discharged filaments into a dispersion region formed between opposed Coanda nozzles, said Coanda nozzles comprising an auxiliary fluid supply means and opposed Coanda surfaces;

(c) applying a Coanda effect to said discharged filaments within the dispersion region by transporting a pulsating

fluid intermittently in an alternating mode, from said auxiliary supply means and attaching said pulsating fluid to the outer surfaces of said opposed Coanda surfaces under conditions whereby the fluid flow follows the curved contour of said Coanda surfaces to create said Coanda effect, thereby causing nonsteady-state conditions



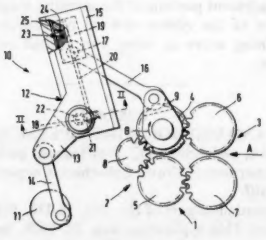
with respect to the opposed Coanda surfaces to be created, and a nonsymmetrical filament flow pattern to be formed within the dispersion region, so that the filaments move in a downward direction past said opposed Coanda nozzles and are alternatively oscillated in a plane perpendicular to said Coanda surfaces by the action of the Coanda effect.

4,285,453

WIRE INSERTION APPARATUS, PARTICULARLY FOR FORMING PRESSES

Walter Flamme, Wegberg-Beeckerheide, and Willi Mielke, Duisburg-Mündelheim, both of Fed. Rep. of Germany, assignors to Peltzer & Ehlers GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Dec. 4, 1979, Ser. No. 100,273
Int. Cl.³ B65H *17/26, 17/22*
U.S. Cl. 226—142 **7 Claims**



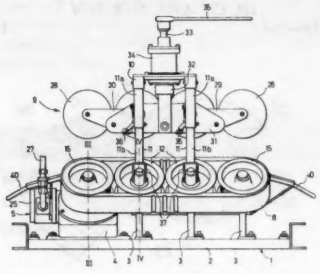
1. A wire insertion apparatus for forming presses and comprising at least one pair of insertion rollers between which a wire or rod is periodically advanced by a predetermined insertion length, a crank and connecting rod mechanism connecting at least one of said insertion rollers to drive shaft for producing a periodic angular movement of said at least one of said insertion rollers, said mechanism comprising an intermediate lever member pivotally mounted about an axis, a first linkage rod connecting said intermediate lever member with a first eccentric on said drive shaft for pivoting said intermediate lever member, a second linkage rod connecting said intermediate lever member with a second eccentric mounted on said at least one insertion roller for producing said angular movement in response to pivotal motion of said intermediate lever member, shifting motor means mounted on said axis for changing the distance between said axis and the pivot point connection between said intermediate lever member and said second linkage rod and thereby changing the degree of said angular movement of said at least one insertion roller.

4,285,454

CABLE CONVEYOR

Gerard Plumettaz, BEX, Switzerland, assignor to Plumettaz, S.A., Canton of Vaud, Switzerland

Filed Jun. 4, 1979, Ser. No. 45,395
Claims priority, application European Pat. Off., Jun. 13, 1978, 78200040.0
Int. Cl.³ B65H *17/22*
U.S. Cl. 226—174 **9 Claims**



1. A cable conveyor comprising a frame, a motor supported by the frame, and a cable-advancing gear-train comprising of two supporting and advancing assemblies disposed in the form of a V and a holding assembly acting vertically on the cable to hold it in contact with the supporting and advancing assemblies, the frame including a rigid base disposed beneath and between the two supporting and advancing assemblies so as not to exceed the width of the cable-advancing gear-train, the motor being accommodated in the frame so as not to exceed the width of the frame, and said supporting and advancing assemblies comprising rollers and shafts bearing the rollers overhangingly, in which conveyor the shafts are connected at one end to the frame, and the holding assembly includes a rigid framework resting upon the free end of certain ones of said shafts.

4,285,455

MECHANICAL FILM DRIVE FOR DRIVING MOTION PICTURE FILM, PARTICULARLY IN PROJECTION AND SCANNING SYSTEMS

Otto Stemme, Munich; Eduard Wagensonner, Aschheim, and Wolfgang Ruf, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 136,114, Mar. 31, 1980. This application Jun. 23, 1980, Ser. No. 162,106
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927541
Int. Cl.³ B65H *17/22*
U.S. Cl. 226—188 **8 Claims**

1. A mechanical film drive for driving motion picture film when the drive is connected to a speed-regulated drive motor, comprising:

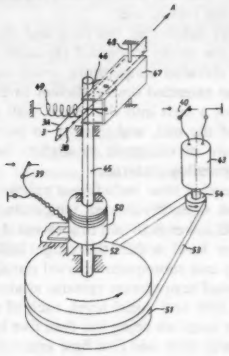
a rotatable drive shaft which, when rotated, drives the film;

a power takeoff attached to the motor and rotated thereby;

an electrically-operable clutch connected to the drive shaft

and the power takeoff, the clutch mechanically coupling and uncoupling the drive shaft and the power takeoff to and from each other; and

means for energizing and deenergizing the clutch including a circuit controlled by the desired film position and the desired projection mode; and



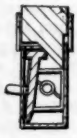
a switch having a first position and a second position, the switch being connected in a manner that when the switch is in the first position, the clutch will be continuously energized, and when the switch is in the second position, the clutch may be intermittently energized by the circuit.

4,285,456

CONSECUTIVELY NAILING MACHINE

Wu Sheng-Wei, No. 33, Tieh Shieh Chun, Fang Liao Hsiang, Pingtung Hsien, Taiwan

Filed Mar. 28, 1979, Ser. No. 24,521
Int. Cl.³ B25C *1/02*
U.S. Cl. 227—147 **5 Claims**



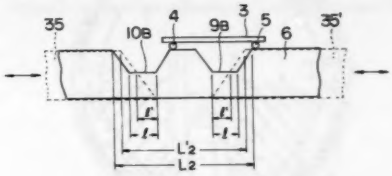
1. A nailing machine comprising an area for storing an interconnected row of nails within said machine at an angle so that a head and body portion of a nail is canted relative to a vertical plane, and a thrust pin for driving individual nails into material to be fastened including an inclined guidance surface relative to a vertical plane for coacting against a single nail disposed at a terminal portion of a row whereby coaction of said guidance surface with said nail dissociates said nail from said row by vertically orienting said nail so that said thrust pin can drive said nail into the material to be fastened wherein said area for storing said row of nails includes a substantially box shaped container having one side wall with an inwardly directed guide plate including a pair of legs: a shorter horizontal upper leg and a longer parallel lower leg whereby said row of nails are canted thereagainst.

4,285,457

APPARATUS FOR SOLDERING PRINTED CIRCUIT BOARDS

Kenshi Kondo, c/o Nihon Dennetsu Keiki Kabushiki Kaisha, No. 27-1, Shimomaruko 2-chome, Ohta-ku, Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 104,722
Claims priority, application Japan, Feb. 19, 1979, 54/17262
Int. Cl.³ B23K *1/08*
U.S. Cl. 228—36 **5 Claims**



1. An apparatus for soldering a printed circuit board, comprising:

a carrier adapted to support a printed circuit board thereon;

first front and rear wheel members mounted at one side of said carrier;

second front and rear wheel members mounted at the other side of said carrier;

a pair of laterally spaced first and second track members adapted for supporting said carrier thereon, said first track member being engageable with said first front and rear wheel members of said carrier and said second track member being engageable with said second front and rear wheel members;

a solder vessel containing molten solder and located between said first and second track members;

drive means for displacing said carrier along said first and second track members and supportingly engageable with a part of said carrier on said one side thereof;

said first and second track members each having first and second depressions of the same depth formed at positions to be met simultaneously by said first and second front and rear wheel members of said carrier;

said first and second depressions having a length and a depth sufficient to allow the underside of said printed circuit board on said carrier to be brought into contact with the molten solder in said solder vessel when said first and second front and rear wheel members are moving along said first and second depressions;

a first rail means slidably located parallel with said first track member and having a guide track portion supportingly engageable with said first front and rear wheel members; and

means for driving said first rail means such that said first front and rear wheel members are guidingly engaged by said guide track portion when said first front wheel member and said second rear wheel member are passing respectively through said second and first depressions and that said first front and rear wheel members are engageable with at least part of said first and second depressions to contact said printed circuit board on said carrier with the molten solder in said solder vessel.

4,285,458

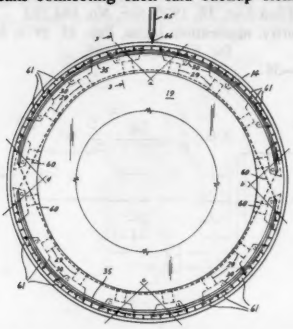
WELDING BACKUP SHOE APPARATUS

Clyde M. Slavens, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Sep. 27, 1979, Ser. No. 79,533
Int. Cl.³ B23K *37/06*
U.S. Cl. 228—49 B **29 Claims**

1. Apparatus for backing up welds during formation of the welds comprising a pair of flexible semicircular band means

disposed end-to-end in spaced circular configuration, means biasing the adjacent band ends toward one another to retract the band means, plural backup elements disposed adjacently side by side along the convex outer side of each said band means, means connecting each said backup element to said



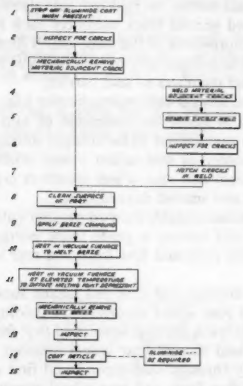
band means and resiliently biasing said backup elements radially outwardly from said band means, and support means for supporting said band means whereby said backup elements may be resiliently disposed against a weld joint oetween the ends of aligned sections of pipe.

4,285,459

HIGH TEMPERATURE BRAZE REPAIR OF SUPERALLOYS

Gregor Baladjanian, Malibu, and Robert L. Rothman, San Pedro, both of Calif., assignors to Chromalloy American Corporation, St. Louis, Mo.

Filed Jul. 31, 1979, Ser. No. 62,410
Int. Cl.³ B23P *6/04*; B23K *1/04*
U.S. Cl. 228—119 **20 Claims**



1. The method for repairing a crack in an article consisting of superalloy material selected from the group that includes Ni and Co as a base material, the crack extending into the article from the surface thereof, the method comprising the steps:

(a) mechanically removing said material adjacent that part of the crack that extends from said surface down into the article, thereby to form in the article a recess whose walls are oxide free,

(b) filling into the recess a braze mix that consists essentially of first and second portions in powdered state, the first portion consisting essentially of said superalloy material or a material analogous thereto, and the second portion consisting essentially of a braze component containing a melting point depressant, the weight ratio of said first and second portions being less than 1.5/1,

(c) subjecting said mix in the recess and the article material adjacent the recess to first elevated temperature under vacuum conditions and for a first time interval for causing said mix to form a melt, said first elevated temperature being less than the melting temperature of said material adjacent the recess; and

(d) thereafter subjecting the melt and the article material adjacent the recess to second elevated temperature near said first elevated temperature under vacuum conditions and for an extended time sufficient to diffuse the depressant out of a melt into the recess wall and into the first portion of the mix, and thereby to increase the melting temperature of said melt to slightly below that of the article superalloy material,

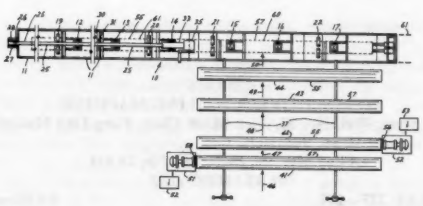
(e) said extended time including a primary interval during which the second elevated temperature remains at an initial level lower than said first elevated temperature, and at a lower level within the range 2050°–2150°, and a secondary and subsequent interval during which the second elevated temperature remains at another level which is higher than said initial level, each of said primary and secondary intervals being less than five hours but substantially greater than said first time interval.

4,285,460

METHOD AND APPARATUS FOR DOUBLE JOINTING PIPE

Edward A. Clavin, Houston, Tex., assignor to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Aug. 13, 1979, Ser. No. 66,037
Int. Cl.³ B23K *31/06, 37/04*
U.S. Cl. 228—212 **16 Claims**



1. Double jointing station apparatus for use in welding two pipe sections together to form a double length pipe section, comprising support means for supporting two pipe sections disposed end-to-end, means for conveying pipe sections lengthwise of said support means in both directions, means for rotatively turning pipe sections disposed on said support means, longitudinal boom means supported at one of its ends at one end of said support means and extending parallely above one end portion of said support means to a central point of said support means whereby a first pipe section placed on the other end portion of said support means may be conveyed lengthwise onto said one end portion of said support means to a position surrounding said boom means, and a second pipe section may be disposed on said other end portion of said support means in end-to-end relation with said first pipe section, internal welding clamp means and internal welding head means carried at the free end of said boom means within the joint between said first and second pipe sections, external welding head means supported outside of said joint between said first and second pipe sections, said welding clamp means including a pair of clamps each exapandable and retractable in the end of one of said first and second pipe sections at the opposite sides of said joint and said internal welding head means being disposed between said clamps at said joint, whereby with said clamps expanded said pipe sections may be

rotatively turned together and welded simultaneously internally and externally at said joint.

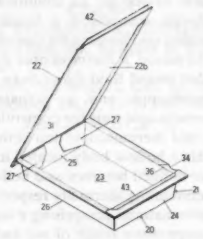
12. Method for double jointing pipe, comprising moving a first pipe section over a longitudinal cantilevered horizontal support having an internal pipe clamp carried at its free end, clamping said first pipe section at one side of said pipe clamp, moving a second pipe section into aligned abutment with said clamped end of said first pipe section and clamping its abutted end at the other side of said pipe clamp, and rotating said pipe sections about their axes while simultaneously forming internal and external welds about the joint therebetween while said pipe sections are being rotated.

4,285,461

CONTAINER

George L. Meyers, Menasha, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 870,597, Jan. 18, 1978, Pat. No. 4,183,458.
This application Aug. 27, 1979, Ser. No. 70,166
Int. Cl.³ B65D *5/66, 43/16*
U.S. Cl. 229—44 R **9 Claims**



1. A container comprising:

(a) an open topped tray formed of paperboard having a bottom, and at least front, back, and lateral side walls connected together and having a top peripheral edge defining the top opening in said tray, a front outwardly extending flange affixed to and extending outward from the front peripheral edge of said tray, an outwardly extending flange attached to and extending outward from the back edge of said tray, and a pair of outwardly extending flanges affixed to and extending from the lateral peripheral edges of said tray, wherein all of said flanges on said tray are attached thereto by cut score hinge lines;

(b) a substantially flat cover having upper and lower sides, the lower side of said cover being adhered to the surfaces of said peripheral flanges to cover the open top of said tray, whereby upon opening, said front and lateral side flanges split with a portion adhering to said cover and a portion remaining attached to said tray, and whereby said cover can be rotated open and closed about said cut score hinge line of attachment between said back edge of said tray and said back flange.

4,285,462

CENTRIFUGES WITH HYDRAULIC CONTROLS

Denis Buffet, Meyzieu, France, assignor to Robatel S.L.P.I., Genas, France

Filed Dec. 11, 1979, Ser. No. 102,473
Claims priority, application France, Jan. 9, 1979, 79 01169
Int. Cl.³ B04B *1/14*
U.S. Cl. 233—20 A **6 Claims**

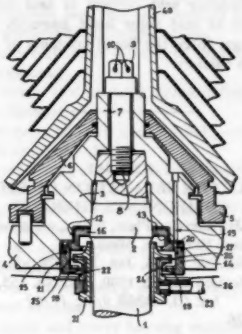
1. A centrifuge comprising:

(a) a frame supporting a rotating shaft having an annular support surface near its outer end;

(b) a sleeve supported by the frame and extending around the shaft adjacent to its support surface, the sleeve having ports extending radially therefrom, and the ports being coupled to a source of hydraulic control liquid whose pressure is adjustable;

(c) an annular member supported on said support surface and surrounding the sleeve in the vicinity of its radial ports, the annular member having an annular groove in its inner surface opening radially toward said ports and the groove having a bottom surface located away from said ports, and the annular member having passages extending from the bottom of the groove away from said ports;

(d) a bowl and lid unit comprising a base bowl having a central hub shaped to slide onto said support surface of the



shaft and be supported thereby and having an enlarged housing portion shaped to overlie and removably seal to said annular grooved member, and the unit having an inner bowl within said base bowl and moveable axially of the shaft therein, and the unit having a lid supported by the base bowl and sealingly engaged by the inner bowl when the latter is moved toward the lid axially with respect to the shaft and the base bowl; and

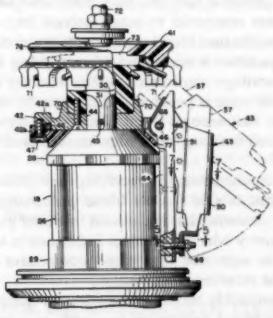
(e) first hydraulically controlled means operative to move the inner bowl into sealing engagement with the lid, and coupled with said passages extending from the bottom of the groove to receive liquid therefrom.

4,285,463

DECANTING CENTRIFUGE

Franklin F. Intengan, Hialeah, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 1, 1979, Ser. No. 90,505
Int. Cl.³ B04B *9/12*
U.S. Cl. 233—26 **23 Claims**



1. A decanting centrifuge comprising a base housing a motor having an upstanding drive shaft; and electromagnet coaxially mounted upon said drive shaft for rotation therewith; said

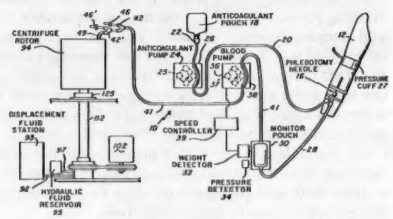
electromagnet having lateral pole faces; a rotor head assembly secured to said drive shaft for rotation therewith; said rotor head assembly including an annular support member coaxial with said shaft and a plurality of magnetically-attractable open-topped tube carriers pivotally suspended from said member about said electromagnet; said tube carriers being adapted to support centrifuge tubes and being pivotally movable between substantially vertical decant positions wherein said carriers rest directly against the pole faces of said electromagnet and outwardly inclined spin positions wherein the carriers are spaced outwardly from said pole faces under the influence of centrifugal force; said electromagnet being selectively energizable for magnetically holding said carriers in said decant positions during rotation of said rotor head assembly for decanting under centrifugal force the liquid contents of the tubes supported by such carriers.

4,285,464

APPARATUS FOR SEPARATION OF BLOOD INTO COMPONENTS THEREOF

Allen Latham, Jr., Jamaica Plain, Mass., assignor to Haemonetics Corporation, Braintree, Mass.

Division of Ser. No. 5,126, Jan. 22, 1979, abandoned. This application Jun. 2, 1980, Ser. No. 155,069
Int. Cl.[3] B04B *9/12, 11/02*
U.S. Cl. 233—26 **5 Claims**



1. A disposable blood pathway for use in the centrifugal separation of blood in a spinning centrifuge rotor into a first blood component and a second blood component comprising, in combination:

a flexible blood processing bag having at least one inlet port and one outlet port, said flexible blood processing bag having inner and outer wall members with a relatively small distance between said inner and said outer wall members compared to other internal bag dimensions so that the distance blood components travel during centrifugal separation is minimized when said bag is supported in the centrifuge rotor in a position whereby said relatively small distance is positioned transverse to the axis of rotation so that second blood component travels along this short internal bag dimension during centrifugal separation;

a receiver container for receiving first blood component separated in said flexible blood processing bag, said receiver container having at least one inlet port and having a geometry which minimizes imbalance in said centrifuge rotor as separated first blood component is introduced into the receiver container;

blood-compatible tubing connecting an outlet port of said flexible blood processing bag with an inlet port of said receiver container; and

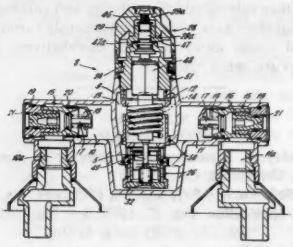
blood compatible tubing for providing fluid communication between a source of blood to be separated and an inlet port on said flexible blood processing bag.

4,285,465

THERMOSTATIC DEVICES

Royston J. North, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Apr. 24, 1979, Ser. No. 32,878
Int. Cl.[3] G05D *23/13*
U.S. Cl. 236—12 A **7 Claims**



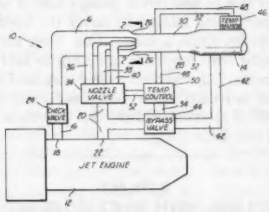
1. A thermostatic device for an ablutionary water mixing appliance, said device comprising a housing, valve means axially movable within said housing for controlling the proportions of fluids to be mixed, a thermoscopic device mounted in said housing so that mixed fluid flows over the external surfaces of said thermoscopic unit, an actuator operable connected to said thermoscopic unit for controlling movement of said valve means, said thermoscopic unit comprising a bellows unit mounted within a hollow body located in said housing, an expansion chamber defined between said bellows unit and said hollow body and containing thermally responsive material, the thermally responsive material comprising a wax based material selected for the temperature range of use and having a liquid phase at the higher temperatures of said range, said actuator being movable by responsive movement of the thermoscopic unit on change of temperature of the mixed fluid.

4,285,466

APPARATUS FOR MIXING HIGH AND LOW PRESSURE AIR FROM A JET ENGINE

Larry L. Linscheid, Wichita, and Philip M. Mueller, Derby, both of Kans., assignors to The Boeing Co., Seattle, Wash.

Filed Feb. 25, 1980, Ser. No. 124,530
Int. Cl.[3] G05D *23/13*
U.S. Cl. 236—13 **7 Claims**



5. The apparatus for mixing high and low pressure air from a jet engine and introducing the mixed air to an air duct of the air conditioning system of an aircraft, the apparatus comprising:

a low pressure air supply line adapted for connection at one end to the low pressure bleed air of the jet engine;

a high pressure air supply line adapted for connection at one end to the high pressure bleed air of the jet engine;

an air-mixing chamber having an inlet section connected to the other end of the low pressure air supply line, the inlet section flared inwardly into a venturi section, the venturi

section connected to an outwardly flared outlet section, the outlet section adapted for connection to the air duct;

a high pressure air supply bypass line connected to the high pressure air supply line and adapted for connection to the air duct;

a bypass valve connected to the high pressure air supply bypass line;

a first, a second, and a third high pressure nozzle, the nozzles connected to a first nozzle valve, a second nozzle valve, and a third nozzle valve, respectively, the nozzle valves connected to the high pressure air supply line, the ends of the nozzles positioned in the air-mixing chamber for mixing the high pressure air with the low pressure air;

a temperature control connected to the nozzle valves for opening and closing the nozzle valves, the control also connected to the bypass valve for opening and closing the bypass valve; and

a temperature sensor adapted for connection to the air duct for sensing the temperature of the mixed air, the sensor also connected to the temperature control for regulating the temperature control.

4,285,467

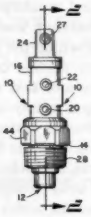
THREE-PORT THERMALLY RESPONSIVE VALVE

Edgar W. Maltby, Elgin, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 841,422, Oct. 12, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 53,675

Int. Cl.³ G05D *23/12*

U.S. Cl. 236—86 **17 Claims**



1. A thermally responsive device for valving a plurality of fluid ports, comprising:

(a) a housing means, said housing means defining

(i) a fluid chamber,

(ii) first, second and third spaced fluid ports communicating with said fluid chamber,

(iii) a transversely extending stop surface intermediate said first and second fluid ports;

(iv) a first valve sealing surface integrally formed by said housing means;

(v) a second valve sealing surface integrally formed by said housing means and spaced from said first valve sealing surface;

(b) valve means disposed within said fluid chamber, said valve means including a valve member movable between a first valving position, an intermediate position, and a second valving position, and having first and second spaced seal means thereon, said valve member further including a flanged portion adjacent said first seal means, said flanged portion being engageable with said stop surface, in said first position said first seal means seals against said first valve sealing surface for isolating said first and second fluid ports from each other, said second seal means is spaced from said second valve sealing surface for fluidly communicating said second fluid port with said third fluid port, said flanged portion being in abutment with said stop surface, in said intermediate position said first seal means remains sealed against said first valve sealing surface and said second seal means against said second seal surface for isolating said first fluid port from said second and third fluid ports, and in said second valving position said first seal means is spaced from said first valve sealing surface for fluidly communicating said first fluid port with said second fluid port and said second seal means remains sealed against said second valve sealing surface for isolating said second fluid port from said third fluid port; said flanged portion being spaced from said stop surface in said intermediate and said second positions;

(c) means biasing said valve member to said first position such that said flanged portion abuts said stop surface; and,

(d) thermally responsive means associated with said housing means and including means operative to move said valve member between said first and second positions in response to predetermined temperatures.

16. A thermally responsive device for valving a plurality of fluid ports, comprising:

(a) housing means, said housing means defining

(i) a fluid chamber,

(ii) first, second and third spaced fluid ports communicating with said fluid chamber,

(iii) a lower housing member having said first and second fluid ports spaced thereon,

(iv) an upper housing member having said third fluid port located thereon,

(v) a first valve sealing surface integrally formed by said lower housing member;

(vi) a second valve sealing surface integrally formed by said upper housing member;

(vii) said upper and lower housing members being joined in a fluid sealing arrangement along a parting surface located adjacent said second valve sealing surface;

(b) valve means disposed within said fluid chamber, said valve means including a valve member disposed within said fluid chamber, said valve member being movable between a first valving position, an intermediate position, and a second valving position, and having first and second spaced seal means thereon, in said first position said first seal means seals against said first valve sealing surface for isolating said first and second fluid ports from each other, said second seal means is spaced from said second valve sealing surface for fluidly communicating said second fluid port with said third fluid port, in said intermediate position said first seal means remains sealed against said first valve sealing surface and said second seal means seals against said second seal surface for isolating said first fluid port from said second and third fluid ports, and in said second valving position said first seal means is spaced from said first valve sealing surface for fluidly communicating said first fluid port with said second fluid port and said second seal means remains sealed against said second valve sealing surface for isolating said second fluid port from said third fluid port;

(c) means biasing said valve member to said first position;

(d) thermally responsive means associated with said housing means and including means operative to move said valve member between said first and second positions in response to predetermined temperature; and

(e) check valve means disposed within said fluid chamber intermediate said valve member and said third fluid port for preventing fluid flow in a direction from said third fluid port to said second fluid port and permitting fluid blow in a direction from said fluid port to said third fluid port.

4,285,468

ARTICLE FOR THE DISPENSING OF VOLATILES

Sy Hyman, 425 E. 58th St., New York, N.Y. 10022

Continuation-in-part of Ser. No. 803,369, Jun. 3, 1977, Pat. No. 4,161,283. This application May 10, 1979, Ser. No. 37,688

Int. Cl.³ A61L *9/04*

U.S. Cl. 239—55 **15 Claims**

1. An article for the dispersion of a volatile substance to the

surrounding atmosphere comprising a substantially liquid impervious, gas permeable polymeric layer, said layer being bonded so as to form a reservoir, a solid comprising a plurality of particulates comprising a polymeric matrix comprising a volatilizable substance in the matrix and being disposed in said reservoir, said matrix providing a controlled release of said volatilizable substance and being one selected from a varied

concentration of said substance in said particulates and varied sized particulates, and a barrier removably adhesively attached to and covering the outer surface of said polymeric layer, whereby the volatilizable substance disperses from the particulates through the polymeric layer to the outer surface of the polymeric layer so that with the removal of the barrier layer the substance volatilizes from the exposed surface of the polymeric layer to the surrounding atmosphere.

4,285,469

APPARATUS FOR CLEANING SURFACES HAVING AN UPRIGHT ORIENTATION

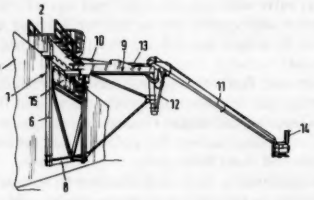
Paul Hammelmann, Zum Sundern 17, 4740 Oelde 1, Fed. Rep. of Germany

Filed Nov. 9, 1979, Ser. No. 92,949

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849079

Int. Cl.³ B05B *3/18*

U.S. Cl. 239—184 **9 Claims**



1. Apparatus for cleaning surfaces having an upright orientation, particularly ship hulls, comprising an elongated carriage movable horizontally along a support having an upright wall; a multi-partite pivotable arm projecting from said carriage and having a free end portion provided with a water-discharging device; a reservoir mounted on and extending along said carriage so as to be located laterally adjacent said wall, said reservoir having an upper portion provided with a water inlet opening which is located at a side facing said wall and is substantially coextensive with the length of said reservoir; a water supply conduit mounted at said wall extending along the path of movement of said carriage and having a plurality of longitudinally spaced water discharge valves positioned to discharge water through said inlet opening into the reservoir; and means responsive to the water level in the reservoir for opening said valves during movement of the reservoir when the water level therein drops below a predetermined lower limit.

4,285,470

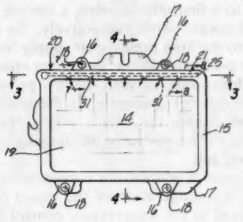
SELF-CONTAINED HEADLAMP WASHER SYSTEM

David W. Roth, Detroit, Mich., assignor to The 2500 Corporation, Lathrup Village, Mich.

Filed Aug. 3, 1979, Ser. No. 63,473

Int. Cl.³ B05B *1/10*; B60S *1/52*

U.S. Cl. 239—284 A **16 Claims**



1. A headlamp washer system for use on a vehicle having at least one headlamp having a lens and a power source, said system including in combination a headlamp bezel for holding said headlamp and nozzle in place on said vehicle, a headlamp washer nozzle assembly at the top of said bezel and having a plurality of passageways therein, an inlet connected to said passageways, a flexible washer fluid container, an electrical pump assembly connected to said container and adapted to be operated by said power source and having an outlet, hosing connected between said pump outlet and said inlet, and an electrical switch connected to said pump assembly to operate the same, wherein the headlamp washer nozzle assembly is of a two-piece construction within the headlamp bezel and does not protude or cover any portion of the headlamp lens, the electrical pump assembly and said means for activating the same is an electrical pump assembly unit for both the headlamp washer and windshield washer systems, the flexible container is a fluid reservoir unit for both the headlamp washer and the windshield washer systems, and wherein said plurality of passageways include a long fluid passageway which decreases in cross-sectional area across the width of the nozzle.

4,285,471

FUEL INJECTION NOZZLE

Ewald Eblen, Stuttgart; Karl Hofmann, Neckarrems, and Odon Kopse, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 886,323

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711393

Int. Cl.³ F02M *61/04*

U.S. Cl. 239—533.4 **11 Claims**

1. A fuel injection nozzle for internal combustion engines comprising,

a nozzle body having a first set of fuel injection openings and fuel inlet means for applying pressurized fuel to said first set of injection openings,

a slidable valve needle in said nozzle body,

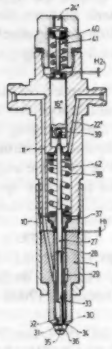
means for applying a closing force to said valve needle against which said valve needle opens for moving said valve needle into closing relationship with said first set of injection openings,

a control piston slidably disposed in said nozzle body for acting at one side on said valve needle,

a spring chamber in said nozzle body,

inlet means in said nozzle body for applying a pressurized control fluid from an associated source of fluid pressure

on a side facing said valve needle in said spring chamber to said control piston, and



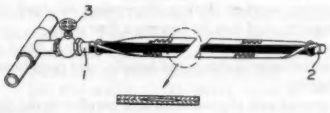
means for controlling said control fluid pressure independently of the fuel being discharged from said fuel injection nozzle through said first set of injection openings.

4,285,472

WATER DROPPING TYPE IRRIGATION PIPE

Hiroaki Okada; Takefumi Sonoda, and Osamu Shoji, all of Ayasemachi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin nanyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,650
Claims priority, application Japan, Apr. 12, 1978, 53/42834
Int. Cl.³ B05B *15/00*
U.S. Cl. 239—542 **7 Claims**



1. A water dropping type irrigation pipe which comprises a base film;

a peeling coating mounted on said base film along the longitudinal axis of said base film;

a second film laminated onto said base film and said peeling coating to form a water conduit having at least one opening; and

a plurality of laminated side parts projected from at least one side of the conduit in the form of fins to form a distribution passage which is branched from the conduit and has a throat in fluid communication with each of said at least one openings wherein said water distribution passage is formed by said conduit and said throat part and wherein said throat part is smaller in width than the distribution passage and said at least one opening.

4,285,473

COMPACT SPEED-REDUCING UNIVERSAL MOTOR DRIVE ASSEMBLY ARRANGEMENT FOR FOOD PROCESSOR

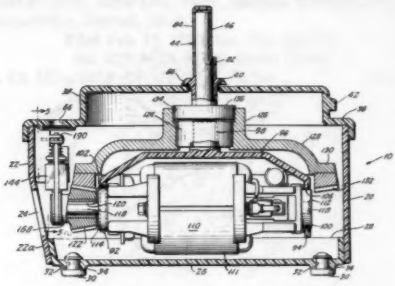
James E. Williams, Stamford, Conn., assignor to Wilson Research & Development, Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 847,759, Nov. 2, 1977, abandoned. This application Jun. 11, 1979, Ser. No. 47,312
Int. Cl.³ B02C *18/12*
U.S. Cl. 241—37.5 **42 Claims**

1. In a food processor of the type including a base housing enclosing a drive unit, a rotatable spindle driven by said drive unit and extending vertically upward from said housing, a bowl detachably mounted on said housing and defining a base opening receiving said spindle, a rotary tool mounted on said spindle within said bowl, and a cover detachably secured to said bowl defining a food receiving aperture therethrough, the improvement wherein said drive unit comprises:

means for supporting an electric motor within said housing;

a universal electric motor carried by said supporting means and having a substantially horizontal drive shaft extending from one end thereof;



a pinion gear mounted on said drive shaft for rotation therewith;

a ring gear engaging said pinion gear and encircling said motor for rotation thereabout in a substantially horizontal plane about a substantially vertical axis;

means for coupling the rotation of said ring gear to said vertically extending rotatable spindle; and,

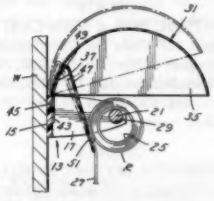
means for controlling rotation of said motor.

4,285,474

TOILET PAPER DISPENSER WITH BIASING MEANS FOR RESTRAINING THE UNWINDING OF THE PAPER

Michael A. Perez, 5825 Glenis St., Taylor, Mich. 48180

Filed Mar. 27, 1980, Ser. No. 134,377
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.2 **11 Claims**



1. In combination with a toilet paper dispenser including a bracket having a base mountable upon a wall and a pair of opposed trunnion arms at the ends of said base with opposed sockets, and a dowel at its ends removably mounted within said sockets supporting and loosely journaling a roll of toilet paper having a depending lead sheet;

a biasing means for restraining unwinding of said roll including a cover projecting from said wall, overlying and partly enclosing said roll, and having front and rear edges;

an elongated mount strip of resilient material secured upon said cover at its rear edge;

an elongated hinge strip flexibly connected to and depending from said mount strip and secured to said wall;

and a friction tab on and flexibly and resiliently connected to said mount strip extending angularly and forwardly downward thereof and adapted to tangentially and yieldably

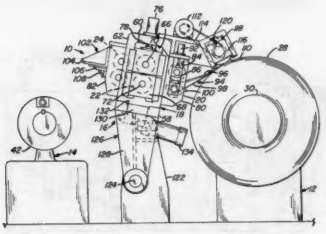
engage said roll, retaining said roll and lead strip for limited and controlled unwinding movements.

4,285,475

MECHANICAL FEED-UP OF WEB MATERIAL ON A RECOILER

John W. Rogers, 22175 Douglas Rd., Shaker Heights, Ohio 44122

Filed Mar. 13, 1980, Ser. No. 129,967
Int. Cl.³ B65H *15/02;* **B21C** *17/10*
U.S. Cl. 242—56.2 **20 Claims**



1. In a web slitting line including an uncoiler, a slitter head containing rotary slitting knives and a recoiler, a coil of web material carried by said uncoiler, said web material being adapted to extend through said slitter and be cut into strips, the method of feeding said web material from said uncoiler to said recoiler comprising the steps of:

(a) moving said slitter head to a position closely adjacent said uncoiler;

(b) unwinding said web material from said uncoiler to place the leading end thereof at the nip of said slitting knives;

(c) engaging said web leading end by said slitting knives;

(d) moving said slitter head to a position closely adjacent said recoiler;

(e) operate said knives to move the leading end of said web into engagement with said recoiler; and

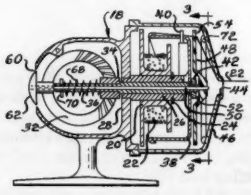
(f) attaching said web leading end to said recoiler.

4,285,476

TOUCH CONTROL FOR A SPIN-CASTING REEL

Robert C. Baenziger, 115 Voltz Rd., Northbrook, Ill. 60062

Continuation-in-part of Ser. No. 958,038, Nov. 6, 1978, abandoned. This application Jul. 11, 1979, Ser. No. 56,611
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 A **11 Claims**



2. In a fishing reel of the type including a non-rotating spool adapted to discharge line therefrom by unwinding line in a generally axial direction from one end of said spool, and line take-up means engageable with the line and rotatable around said spool for winding line onto said spool, the improvement comprising, in combination;

an axle member and means supporting said axle member in a generally coaxial relationship with respect to said spool and freely rotatable with respect to said spool and said line take-up means;

line engaging means mounted on said axle member adjacent said discharge end of said spool, said line engaging means including at least one distinct line engaging portion engageable with the line during discharge from said spool to cause rotation of said line engaging means and said axle member;

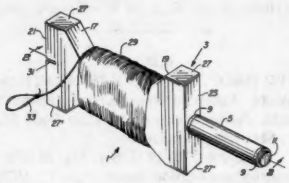
touch control means mounted on said axle member beyond the other end of said spool for rotation with said axle member and said line engaging means during line discharge, and operable upon frictional engagement to retard selectively rotation of said line engaging means to control the discharge of line from said spool.

4,285,477

CONSTRUCTION LINE REEL

Terrence L. Oxendahl, 1130 E. Butler B-5, Phoenix, Ariz. 85020, and Allen E. Davidson, 17008 N. 49th Ave., Glendale, Ariz. 85308

Filed Apr. 30, 1979, Ser. No. 34,552
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—96 **6 Claims**



1. Apparatus for dispensing cord for use in conjunction with construction work, said apparatus comprising in combination:

a. an elongated handle to be held in a single hand of a construction worker during dispensing of cord from said apparatus, said handle having a first axis;

b. a substantially elongated cord bearing head rotatably mounted on said elongated handle, said cord bearing head including

i. a second axis aligned with and parallel to the first axis of said elongated handle, said cord bearing head having a substantially rectangular cross-section to effect convenient insertion of said cord bearing head into a pocket of the construction worker and withdrawal of said cord bearing head from a pocket of the construction worker, said second axis being an axis of rotation of said cord bearing head,

ii. first and second opposed parallel ends through which the axis of rotation passes,

iii. first and second parallel opposed major faces extending between respective edges of said first and second opposed ends, and

iv. first and second opposed side surfaces each extending between corresponding edges of said first and second major faces and said first and second ends, said first side surface having first and second substantially coplanar end portions, a first cord receiving notch being disposed between said first and second end portions, said first cord receiving notch having a first notch bottom surface parallel to said second axis, a first sloping surface extending between said first notch bottom surface and said first end portion, and a second sloping surface extending between said first notch bottom surface and said second end portion, said second side surface having third and fourth substantially coplanar end portions, a second cord receiving notch being disposed between said third and fourth end portions, said second cord receiving notch having a second notch bottom surface parallel to said second axis, a third sloping surface ex-

tending between said second notch bottom surface and said third end portion, and a fourth sloping surface extending between said second notch bottom surface and said fourth end portion, said first and second sloping surfaces sloping outwardly from said first notch bottom surface toward said first and second ends, respectively, said third and fourth sloping surfaces sloping outwardly from said second notch bottom surface toward said first and second ends, respectively;

c. bearing means for rotatably connecting said elongated handle to said second end; and

d. notch means for retaining a loose end of cord wound on said cord bearing heads, the distance between said first and second end being equal to a first distance, the lengths of said first and second notch bottom surfaces being equal to a second distance, said first distance being substantially greater than said second distance, the second distance being substantially greater than a third distance between said first and second major faces, said first, second and third distances being selected to enable said cord bearing head both to be easily inserted into and withdrawn from a pocket of the construction worker and to enable an approximately 200 foot length of construction cord to be conveniently wound on said cord bearing head so that loops of the wound construction cord do not extend substantially outwardly of said first, second, third and fourth end portions, thereby preventing loops of wound construction cord from slipping laterally off of said cord bearing head,

said cord bearing head having no protrusions therefrom which can interfere with inserting said cord bearing head into a construction worker's pocket or withdrawing said cord bearing head from a construction worker's pocket,

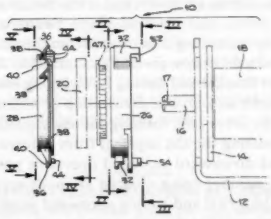
whereby a worker can safely and conveniently carry and deploy said apparatus to dispense construction cord using only one hand with little attention being focused on orientation of said apparatus during the dispensing.

4,285,478

SEAT BELT RETRACTOR MECHANISM HOUSING

Nazareth Stamboulian, Los Angeles, Calif., assignor to American Safety Equipment Corporation, San Fernando, Calif.

Filed Jul. 6, 1979, Ser. No. 55,181
Int. Cl.³ A62B *35/00;* B65H *75/48*
U.S. Cl. 242—107 **9 Claims**



1. In a safety belt retractor having a frame, a belt storage spool rotatably mounted to said frame, a safety belt connected to and having belt portions stored on said storage spool for protraction and retraction relative to said frame, and spring means including an inner end and an outer end for applying a bias on said spool in a direction resisting unwinding of said belt from said spool to a position of use, said spring means attaching by said inner end to said spool, a housing for said spring means comprising:

a housing body attached to said frame and having at least one socket member disposed on its periphery; and

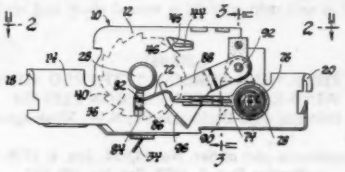
a housing cap including means for engaging said outer end of said spring means and being separate from and abutting said body in covering relation, said cap having at least one locking flange positioned on its periphery, said locking flange being positionable between a first position allowing said cap to rotate relative to said housing in said abutting position to tension said spring means and a second position allowing said locking flange to engage said socket means, said engagement thereby affixing said housing cap to said housing body when the desired tension has been achieved.

4,285,479

INERTIA RELEASE FOR BELT RETRACTOR WINDING PREVENTION MECHANISM

Hubert P. Blom, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 11, 1980, Ser. No. 120,573
Int. Cl.³ A62B *35/02;* B65H *75/48*
U.S. Cl. 242—107.4 A **3 Claims**



1. A vehicle occupant restraint belt retractor comprising:

a housing; a belt reel rotatably mounted on the said housing; a restraint belt attached to the reel and wound and unwound thereon during reel rotation; a winding spring normally biasing the reel in the belt winding direction of rotation to pull the belt taut about the occupant; a first inertia-sensing means adapted to sense a predetermined level of vehicle deceleration and lock the belt reel against belt unwinding rotation upon occurrence of the predetermined level; detent means acting between the reel and the housing to selectively lock the reel against belt winding rotation by the winding spring and thereby relieve belt tension on the occupant by establishing a slackened belt condition about the vehicle occupant; a second inertia-sensing means for sensing a predetermined second level of vehicle deceleration less than the level of deceleration sensed by the first inertia-sensing means and adapted to unlock the detent means whereby the winding spring effort is restored to rotate the reel in the belt winding direction of rotation to pull the belt taut against the vehicle occupant prior to locking of the belt reel against belt unwinding rotation by the first inertia-sensing means.

4,285,480

CASSETTE LOADING SYSTEM AND SELF-THREADING CASSETTE FOR USE THEREWITH

Ralph Parker, Melbourne Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Jul. 31, 1979, Ser. No. 62,290
Int. Cl.³ G03B *1/04;* G11B *15/32*
U.S. Cl. 242—195 **25 Claims**

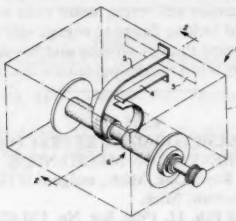
1. A self-threading cassette for strip material comprising:

a cassette housing having an opening through which said strip material is introduceable;

a takeup reel rotatably mounted within said cassette housing; and

guide means mounted in said cassette housing for directing said strip material introduced through said opening to said takeup reel and causing said strip material to pass in an unsecured manner over and around said takeup reel until the leading end of said strip is gripped between said reel and a remote portion of said strip material, said guide means being formed of a spring curved continuously

around said reel so as to be urged against said reel at a nip portion between itself and said reel, the contour of said



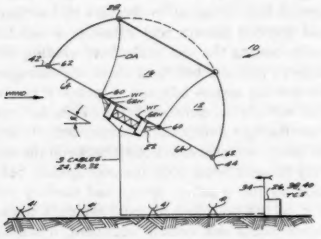
spring being curved upstream and downstream of said nip portion so as to be able to flex and expand away from said reel as said strip material is wound about said reel.

4,285,481

MULTIPLE WIND TURBINE TETHERED AIRFOIL WIND ENERGY CONVERSION SYSTEM

Lloyd I. Biscomb, 4452 Burlington Pl., N.W., Washington, D.C. 20016

Continuation-in-part of Ser. No. 44,934, Jun. 4, 1979. This application Dec. 7, 1979, Ser. No. 101,492
Int. Cl.[3] B64B *1/02, 1/50;* F03D *9/00*
U.S. Cl. 244—33 **32 Claims**



1. A multiple wind turbine tethered airfoil wind energy conversion system, comprising:

a positive-lift, lighter-than-air, flexible gas bag-type airfoil provided with a lined vent which extends completely generally axially therethrough;

a plurality of wind energy conversion devices each having a power output-providing device;

frame means supported by said airfoil and mounting said wind energy conversion devices for rotation relative to said airfoil, each being axial aligned so as to be substantially parallel with said vent;

a plurality of motorized, individually operable winches, being at least three in number, and being for disposition at spaced sites generally in an imaginary ring on the ground;

each such winch having a tether line having a first end connected therewith and having a respective outer end;

means connecting each tether line outer end to said airfoil radially distally of said vent, so that said airfoil is tethered to said winches from a plurality of widely distributed sites;

a means for supplying inflating lighter-than-air gas to the airfoil, this means including a gas inlet control valve;

a means for releasing inflating lighter-than-air gas from within the airfoil, this means including a gas release control valve;

means for sensing wind direction incident upon said airfoil and for providing an output signal in relation thereto;

a tether control system incorporating means for determining for each of a plurality of various different wind direction-related output signals received from said sensing means, respective control signals equating to the amounts by which each of the respective tether lines must be reeled in or payed out in order to tilt the airfoil into the wind at an optimum angle of attack to maximize power output of said power output-providing devices of said wind energy conversion devices;

means operatively connecting said sensing means to said tether control system for furnishing said output signal to said tether control system; and

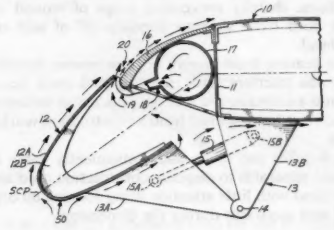
means operatively connecting said tether control system to each of said motorized, independently operable winches for furnishing said respective control signals to the respective said winches.

4,285,482

WING LEADING EDGE HIGH LIFT DEVICE

Delbert S. Lewis, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 10, 1979, Ser. No. 65,403
Int. Cl.[3] B64C *21/08, 9/24, 3/44*
U.S. Cl. 244—207 **18 Claims**



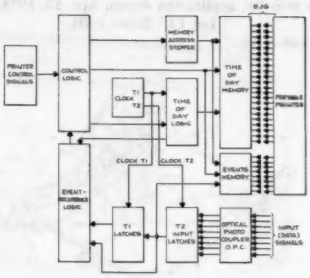
1. A leading edge high-lift generating device for an airfoil, comprising: a spanwise slat segment forming the nose structure of the airfoil, and having both an upper and a lower trailing edge surface faired into the cross-sectional configuration of the airfoil, without any aerodynamic surface discontinuities, when in a fully retracted and stowed position; means for externally hinging said spanwise slat segment to the undersurface of the airfoil for curvilinear extension and retraction movement relative to the airfoil; said external hinge means comprising, a support bracket extending downward from the undersurface of the airfoil, and a drive arm pivotally mounted to the lower end of the support bracket and having its swinging end fastened to the slat segment; said pivotal connection between the support bracket and the drive arm, forming the slat segment hinge axis; means for actuating the slat segment from a stowed position to a forward and downward extended operative position; a contoured panel member being secured at an aft portion to fixed structure of the airfoil and having a forward portion forming a fixed nose structure for the airfoil when said contoured panel member is exposed by forward curvilinear extension of the slat segment to form a continuous upper surface contour between said extended slat segment and the airfoil, and thereby providing both an increased cambered airfoil and an increased airfoil area; said panel member having an upper surface contoured along a radial arc that has a virtual center off-set from the slat segment hinge axis, for tailoring an aerodynamic slot between said slat segment and said panel member to increase in size proportional to the degree of slat segment extension for providing a greater amount of airflow through the aerodynamic slot as both the exposed upper contoured surface area of said panel member increases and said slat segment angle-of-deflection increases; thereby, maintaining streamwise boundary layer airflow attachment to the upper surface of the airfoil.

4,285,483

ELECTRONIC EVENTS RECORDING MEANS

John J. Cipollone, San Bernardino, Calif., assignor to Electro Pneumatic Corporation, Riverside, Calif.

Filed May 7, 1979, Ser. No. 36,347
Int. Cl.³ B61L *21/00*
U.S. Cl. 246—107 **5 Claims**



1. An events-monitoring and event-data storing device comprising:

a plurality of electric signal input lines for receiving respective event-representing electric signals;

clock means for providing a first series of electric timing pulses and a second series of such pulses each following in time a pulse of said first series;

a first series of logical latches each connected to a respective one of said signal input lines and to said clock means to pass a clocked input signal in response to a pulse of the first series of pulses and a coincident signal on a respective one of said input lines;

memory means including a series of memory units connected to said latches to receive and record clocked input signals from respective ones of said latches;

a second series of latches each connected to said clock means to receive and pass a signal passed from a respective one of said first series of latches in response to a coincident pulse of the second series of electric timing pulses;

means to provide a continuing series of signals representing current time of day information; and

logical circuit means responsive to a signal passed by any of said second series of latches to cause recording in said memory means of the time-of-the-day concurrently with the recording of any passed input signal;

whereby throughout an indefinitely extended period of time any event-representing electric signal received on any of said signal input lines is individually recorded in said memory means concurrently with a record of the time of occurrence of the respective event.

4,285,484

SHELF AND CLOTHES ROD ASSEMBLY FOR A CLOSET

James S. Follows, 19239-96th Ave., Surrey, British Columbia, Canada (V3T 4W2)

Filed Jun. 7, 1979, Ser. No. 46,405
Int. Cl.³ A47B *57/00*
U.S. Cl. 248—235 **5 Claims**

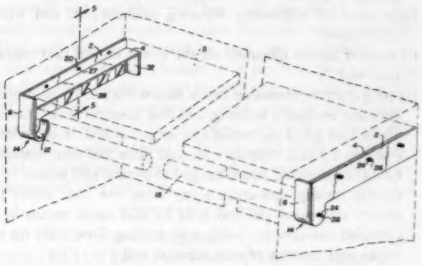
1. A shelf and clothes rod assembly for a closet comprising:

a rigid shelf having end surfaces oriented substantially transversely to the lengthwise axis of said shelf;

a clothes rod having end surfaces oriented substantially transversely to the lengthwise axis of said rod;

a pair of closet fittings adapted for attachment to opposing interior walls of the closet, each fitting having an elongate first solid wall to abut an interior wall of the closet and a second wall longitudinal of and extending transversely from said first wall for supporting an end of said shelf, each fitting further including a curved wall extending from said first wall for supporting an end of said clothes rod, said curved wall being below said second wall when said fitting is attached to said closet wall, each fitting further including a plurality of openings in said first wall, including a plurality of said openings positioned in said first wall to open toward an end surface of said shelf and an opening positioned in said first wall to open toward an end of said clothes rod when the assembly, including the shelf and clothes rod, is installed in the closet;

expansion fastener means associated with said openings of said fittings for attaching said fittings to said closet walls, said fastener means each including an expandable body insertable through an opening of said fitting and into an



aligned hole in the wall and an expander member insertable in said expandable body to forcibly expand said expandable body outwardly, each of said expandable bodies further including an integral ring that abuts said first wall of said fitting upon said expandable body being inserted through said opening of said fitting;

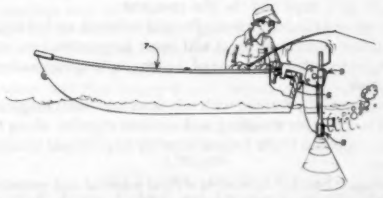
said shelf and said clothes rod each being sized in length such that their opposite end surfaces snugly abut said expander members of said expansion fastener means when said fittings are attached to said opposing interior walls of said closet and said shelf and said clothes rod are interposed substantially horizontally between said fittings to bear upon said second walls and said curved walls, respectively, of said fittings.

4,285,485

RETRACTABLE SONAR SENSING SYSTEM

Willard E. Burke, 416 W. Douglas Ave., Fergus Falls, Minn. 56537

Filed Jul. 23, 1979, Ser. No. 59,562
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—291 **10 Claims**



1. A readily retractable sonar sensor system comprising:

(a) a support plate member;

(b) clamping means carrying said plate member and constructed and arranged to clamp the transom of a fishing boat and thereby support said plate member in rearwardly generally vertically extending position relative to such a transom;

(c) a mounting disc member extending substantially parallel to and beside said plate member;

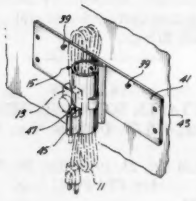
(d) a pivot pin carried by said plate member rearwardly of said clamping means and of the boat and rotatably mounting said disc member thereon for rotation of said disc member about an axis located centrally of the latter and closely adjacent said clamping means;
(e) spring bias means carried by said pivot pin and urging said members toward each other;
(f) a sleeve fixedly mounted on said disc member laterally of said pivot pin and on the side of said disc member non-adjacent to said plate member and having its axis extending generally parallel to said disc member;
(g) a sonar sensor support rod slidably mounted within said sleeve for longitudinal shifting thereof axially of said sleeve to permit vertical adjustment of said rod;
(h) means for adjustably securing said support rod within said sleeve;
(i) a sonar sensor mounted on the lower end of said support rod; and,
(j) cooperative releasable catch means carried by said members and normally holding said disc member from rotating about said pivot pin while said sensor is held in depending position by said support rod, said plate and disc members being constructed and arranged to permit said sensor to be readily swung upwardly away from the boat about the axis of said pivot pin and held by said catch means in an elevated out-of-way position by pulling forwardly on the upper end portion of said support rod.

4,285,486

CORD HOLDER

Jewell Von Osten, Rte. 2, Box 854, Shelton, Wash. 98584, and Gilbert F. Duppman, P.O. Box 96, Allyn, Wash. 98524

Filed Jul. 12, 1979, Ser. No. 56,819
Int. Cl.³ A47F *5/00*
U.S. Cl. 248—316 B **7 Claims**



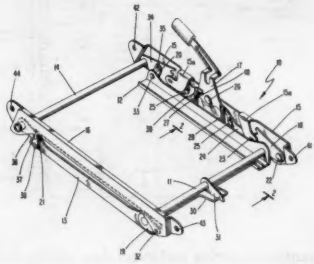
1. A cord holder for holding a bundle formed of loops of electrical cord, rope and the like comprising:
an elongate cylinder formed of a rigid material, said elongate cylinder formed of inner and outer longitudinal sections hinged together along one of the longitudinal edges of said section;
a clasp integrally formed with said inner and outer longitudinal sections for attaching said sections together along the edge opposed to the hinged together edge of said sections; and,
an elongate bracket formed of a rigid material and including a slot adapted to receive a nail, screw, peg or the like, said elongate bracket including an elongate circular portion having a longitudinal axis lying parallel to the longitudinal axis of said elongate cylinder, said elongate circular portion affixed to the outer surface of the inner longitudinal section of said elongate cylinder, said elongate bracket also including a slotted plate mounted across one end of the rails defined by said circular portion, said slot being formed in said slotted plate.

4,285,487

ASSEMBLY FOR LOCKING AND UNLOCKING AN AUTOMOBILE SEAT IN SELECTED VERTICAL POSITIONS

Kenichi Kazaoka, Nagoya, and Masayuki Hayashi, Toyohashi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 16, 1979, Ser. No. 30,471
Claims priority, application Japan, Apr. 17, 1978, 53/44925
Int. Cl.³ B60N *3/06*
U.S. Cl. 248—396 **5 Claims**



1. A seat-supporting assembly for locking and unlocking an automobile seat in selected vertical positions comprising:
a seat rail for attachment to an automobile seat,
a floor rail for attachment to an automobile floor,
a rotatable latch member pivotably mounted at one point to the seat rail and at a second point to the floor rail for permitting the selective adjustment of the relative portions of the rails upon its rotation, said latch member including a plurality of spaced notches,
a locking plate rockably connected to one of said rails by the combination of a first pin fixedly mounted on said one of said rails and an elongated arcuate slot formed in said locking plate, said first pin protruding through said slot, said locking plate including a stop pin, fixedly connected to said locking plate, for engaging a selected one of said notches to lock the latch member in a selected position upon the rocking of said locking plate to a locking position and for disengaging said notches to unlock the latch member upon the rocking of said locking plate to an unlocking position;
a flange formed on said one of said rails, said flange including an elongated slot to guide said stop pin along only one linear path of motion and into engagement with a selected one of said notches,
said arcuate slot formed in said locking plate being formed so that a wall of said arcuate slot opposite said elongated slot interacts with said first pin to preclude the movement of said locking plate and stop pin along said linear path of motion when said locking plate is in the locking position,
a lever rotatably connected to one of said rails for rocking said locking plate to an unlocking position to permit the adjustment of the rails, and
resilient means for urging said locking plate and said lever into the locking position.

4,285,488

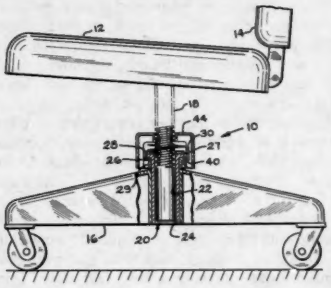
HEIGHT ADJUSTING MECHANISM FOR A SWIVEL CHAIR

William L. Hancock, Lexington, Ky., assignor to Hoover Universal, Inc., Saline, Mich.

Filed Mar. 20, 1979, Ser. No. 22,190
Int. Cl.³ F16M *11/26*
U.S. Cl. 248—405 **5 Claims**

1. Height adjusting apparatus for a swivel chair comprising a main screw member having thread means formed thereon, a nut member having a body portion which is a generally flat

piece of steel deformed into engagement with said screw thread so that said nut member is threadably mounted on said screw member for selective movement lengthwise thereof to adjusted positions in response to relative rotation between said nut member and said screw member, said body portion being continuously biased against said thread means in a direction axially of said screw member to impart an initial frictional



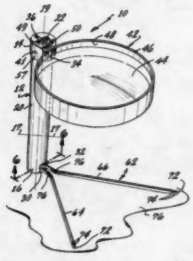
resistance between said nut member and said screw member hindering rotation therebetween, said body portion being operable to deform against said screw member thread means in response to the application of a load to said nut member in a direction generally lengthwise of said screw member thereby increasing the frictional resistance between said nut member and said screw member to restrain relative movement between said nut member and said screw member.

4,285,489

STAND FOR SUPPORTING A HAND-HELD IMPLEMENT

Floyd W. Blanchard, 4347 Sarah St., Burbank, Calif. 91505

Filed Mar. 27, 1979, Ser. No. 24,267
Int. Cl.³ A47F *7/14*
U.S. Cl. 248—471 **6 Claims**



1. In combination, a stand and hand-held implement comprising:

an elongated grip portion sized to fit comfortably in a user's hand, said elongated grip portion including upper and lower ends and major and minor axes;

an instrument affixed to said upper end of said elongated grip portion;

a pair of elongated support members each having major and minor axes;

a bight member connecting said support members together into a unitary structure with said support members each having a free end and a natural resiliency normally biasing said free ends to positions diverging away from each other

an elongated channel formed inside said grip portion along its major axis and extending from its upper end to a point closely adjacent its lower end, whereby a bottom wall and an encompassing sidewall are provided on said grip portion, said bottom wall having an outside lower surface forming said lower end of said grip portion; and

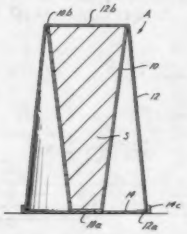
a pair of spaced-apart slots provided in said bottom wall in communication with said channel, each of said slots piercing said sidewall and extending from said outside, lower surface of said bottom wall vertically upwardly in said sidewall to a position above said bottom wall, whereby said support members may be moved to a convergent position in said channel with said bight member adjacent said upper end of said elongated grip portion and with the free end of each support member extending through an associated one of said slots on said bottom wall to a position externally of said lower end so that said encompassing sidewall and said slots will hold said support members in said convergent position against said bias and so that said free ends may be grasped by said user for drawing said members from said channel to a position such that said bight member bottoms out on said bottom wall when each of said support members is positioned in the sidewall-piercing portion of its slot with the major axis of each support member spread to its normally divergent position and lying approximately normal to the major axis of said elongated grip portion.

4,285,490

APPARATUS FOR PARTIALLY PRE-MAKING A SOLID-LIQUID BEVERAGE

Michael W. Hanley, 6000 Sun Forest Dr., #2701, Houston, Tex. 77092

Filed Dec. 21, 1979, Ser. No. 106,277
Int. Cl.³ A23G *9/00*; B29C *6/00*
U.S. Cl. 249—92 **5 Claims**



1. Apparatus for making a solid-liquid beverage, comprising:

a first cup suitable for being filled with a freezable, edible substance;

said first cup having a base at one end and being open at the opposite end;

a cup lid mounted with the base of said first cup; and,

a second cup having a base for mounting over the open end of said first cup and an open end for engaging said lid when said first cup and said second cup are assembled together.

4,285,491

SECTIONAL HOT TOP

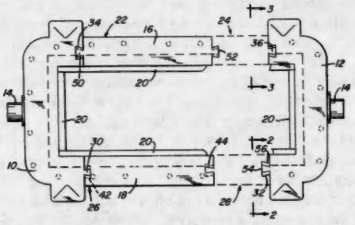
Anthony R. Bonta, Hobart, and Charles J. Gasche, Portage, both of Ind., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 944,506, Sep. 21, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,799
Int. Cl.³ B22D *7/10*
U.S. Cl. 249—102 **5 Claims**

1. In a hot top for an ingot mold, said hot top comprising a plurality of sections mateable along adjoining substantially vertical edges, said sections including a pair of diametrically

opposed lift sections with means engageable by a crane for transporting said hot top and an intermediate section fitting between each of the corresponding ends of the lift sections, and means for connecting said lift sections and intermediate sections together, the improvement in said hot top in which:

said connecting means comprises a tongue and groove joint extending longitudinally along the adjoining edges of said



lift sections and intermediate sections so that said sections are readily detachable and may be interchanged with sections of various lengths to change the size of said hot top,

said joints being tapered in the longitudinal direction thereof so as to transmit an upward force to the intermediate sections when the lift sections are raised and thus prevent separation of the sections during transport of the hot top.

4,285,492

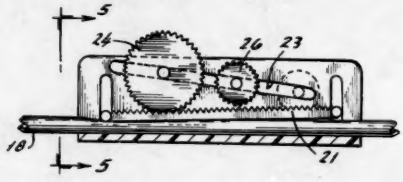
FLOW CONTROL DEVICE

Albert F. Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 20, 1979, Ser. No. 77,456

Int. Cl.³ F16K 7/06; A61M 5/14

U.S. Cl. 251—9 **14 Claims**



1. A tubing clamp for regulating flow of fluid through a length of flexible tubing comprising:

a clamp body defining a surface for supporting a length of flexible tubing having a longitudinal axis;

opposing walls extending from said support surface and presenting a passage for said tubing;

a platen mounted between said walls for contacting said tubing;

guide surfaces arranged in said walls;

a first rotatable member positioned to be guided by said guide surfaces:

said platen constructed and arranged to be movably positioned between said first rotatable member and said tubing;

said platen presenting a compression surface against said tubing substantially along and over the path of travel of said first rotatable member, and cooperating with said first rotatable member to exert an incremental compressive force on said tubing and by means of said platen to distribute the compressive force of said first rotatable member over a wide area of said tubing including a substantial distance along its longitudinal axis; and

a second rotatable member operatively positioned within said clamp body and arranged to cooperate with said first rotatable member and said platen to exert an incremental compressive force upon said tubing whereby said first rotatable member and said second rotatable member provide separate control means for coarse and fine regulation of said flow of liquid through said flexible tubing; said first rotatable member being a roller having pins extending therefrom and said guide surfaces comprise a plurality of grooves with said pins positioned in said grooves and said grooves having an axis positioned to intersect the axis of said support surface; said roller being adapted to rotate within said grooves and thereby to move longitudinally along said grooves so as to compress said platen against said tubing and thereby constrict same; and

said second rotatable member comprising a roller having pins extending therefrom with said pins positioned in said opposing walls, whereby movement of said first rotatable member along said guide surface is effective to contact said first rotatable member initially against said platen so as to pivot said platen against said tubing thereby compressing said tubing and consequently constricting said flow of liquid through said tubing; movement of said second rotatable member against said platen being effective to further compress said platen against said tubing thereby further compressing said tubing so as to incrementally increase or decrease said flow of said liquid in minute quantities.

4,285,493

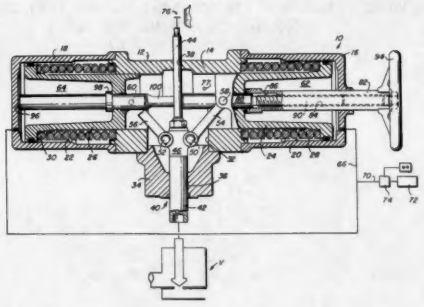
VALVE OPERATOR

Gordon A. Willis, Canoga Park, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 1, 1979, Ser. No. 16,654

Int. Cl.³ F16K 31/143, 31/50

U.S. Cl. 251—14 **2 Claims**



1. A fail-safe-open valve operator comprising:

a pair of opposed cylinders joined together;

a piston in each cylinder and each defining with its cylinder a piston chamber located at opposed ends of said joined cylinders;

said pistons being movable between a normal position spaced from each other corresponding to a valve-open position and a position closely adjacent to one another corresponding to a valve-closed position;

resilient means in said cylinders and surrounding said pistons urging said pistons to their normal positions spaced from each other;

a valve operating rod movable in directions normal to the pistons and having a valve member adapted to be seated on a valve seat, said rod being movable between said valve-open position in which said valve member is spaced from said valve seat and said valve-closed position in which said valve member is seated on said valve seat;

toggle link means connecting said pistons and said valve

operating rod for providing the valve operating rod movement;

means to supply a pressurized fluid to each chamber and to the piston therein to counter said resilient means and to move said pistons and said valve operating rod to their valve-closed position wherein said pistons are closely adjacent one another;

said resilient means moving said pistons and said valve operating rod to their valve-open positions upon failure of said pressurized fluid supply means to supply pressurized fluid to said chambers.

2. A valve operator as recited in claim 1 further comprising means to manually move said pistons and said valve operating rod between their positions.

4,285,494

ENGINE AIR CUT-OFF DEVICE

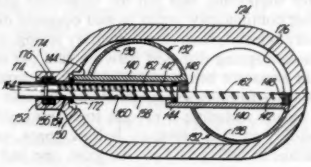
Leonard A. Sturgeon, Edmonton, Canada, assignor to Bralorne Resources Limited, Calgary, Canada

Division of Ser. No. 842,691, Oct. 17, 1977, Pat. No. 4,215,845. This application Jun. 2, 1980, Ser. No. 155,684

Claims priority, application Canada, Dec. 16, 1976, 268047

Int. Cl.³ F16K *3/00*; F02B *77/00*

U.S. Cl. 251—63 **2 Claims**



1. A cut-off device for an engine air manifold comprising a valve body having a generally cylindrical passage therethrough arranged for alignment with a corresponding passage in an engine air manifold, a cavity in said valve body opening into said valve body passage, a generally circular gate movably contained in said valve body and having a path of movement across said valve body passage extending from a normally retracted position with said gate fully housed in said cavity so as to maintain said valve body passage normally fully open, to a closed position with said gate fully blocking and sealing said valve body passage, a cylindrical bore in said gate axially aligned with said path of movement, said bore being closed at one end by an end face and being open at the other end, a hollow rod resiliently mounting said rod at one end in said valve body coaxial with, extending through said cavity into the open other end of and sealingly engaging said cylindrical bore, wherein said mounting means includes an annular enlargement on said rod and a pair of annular resiliant mounting members located in a recess of said valve body, said enlargement being positioned between said mounting members, a tension spring located in the interior of said hollow rod with one end attached to said end face and the other end thereof anchored in said rod adjacent the one end thereof, said spring biasing the gate to its normal retracted position, and means for introducing fluid under pressure into said bore via said hollow rod whereby the fluid may react against said end face to drive the gate from the retracted position to the closed position.

4,285,495

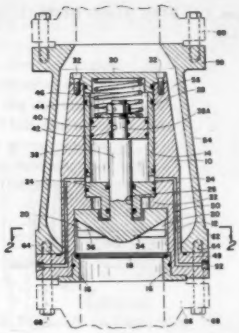
SAFETY VALVE

Ottis W. King, 8534 E. 24th, Tulsa, Okla. 74127

Continuation of Ser. No. 860,700, Dec. 12, 1977, abandoned. This application Mar. 31, 1980, Ser. No. 135,498

Int. Cl.³ F16K *31/122*

U.S. Cl. 251—63.5 **5 Claims**



1. A safety valve comprising:

an upright tubular body having an axial opening therethrough, a portion of the opening at the lower end forming a flow passageway communicating with the lower end and forming an outlet port, the body having inlet ports spaced above the lower end communicating between the flow passageway and the body exterior surface, said inlet ports comprised of a plurality of spaced openings in a common plane, the upper portion of the axial opening forming a cylinder, the body having an internal cylindrical shoulder in the axial opening dividing the lower flow passageway from the upper cylinder;

an end cap closing the upper portion of the body axial opening;

a cylindrical internal stem guide member removably positioned within said axial opening separating said lower flow passageway and said upper cylinder, and having a reduced diameter axial opening therein;

a tubular sleeve received in said cylinder portion of said body axial opening, the lower end of the sleeve engaging said stem guide member and the upper end of said sleeve engaging said end cap whereby said sleeve and stem guide are held in place between said internal shoulder and said end cap;

a plunger including a valve means reciprocally supported within said flow passageway, the plunger having an upwardly extending axial stem reciprocally and sealably received in said stem guide member axial opening, the plunger having a sealing surface thereon said valve means provides a recess for receiving a portion of said stem guide when the valve means is in the fully open position;

a seating surface within and partially defining said flow passageway, the seating surface being between said inlet port and said lower end outlet port, the valve being closed when said plunger sealing surface engages the seating surface;

a piston reciprocally positioned in said upper sleeve, the piston being affixed to the upper end of said plunger stem;

a spring compressibly positioned within said sleeve between said piston and said end cap to urge said plunger towards the closed position;

and said body having a small diameter passageway communicating between the body exterior and said cylinder above said stem guide means whereby fluid pressure may be supplied through the small passageway to force said piston and thereby said plunger upwardly to open the valve means.

4,285,496
ELECTRO-HYDRAULIC SYSTEMS

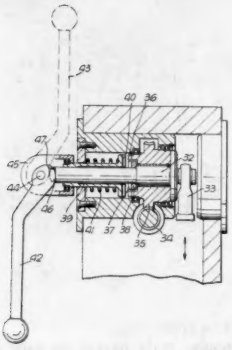
Ernest F. Coles, Hertfordshire, England, assignor to Hawker Siddeley Dynamics Engr., Ltd., Hatfield, England

Division of Ser. No. 841,442, Oct. 12, 1977, Pat. No. 4,190,081. This application May 22, 1979, Ser. No. 41,496

Claims priority, application United Kingdom, Oct. 14, 1976, 42695/76

Int. Cl.³ F16K *31/05*; F16D *11/10*

U.S. Cl. 251—130 **6 Claims**



1. Mechanical drive means for valve spool comprising

a rotary shaft,

a worm wheel rotatable on said shaft, a motor-driven worm meshing with said worm wheel,

coupling means converting rotary motion of said shaft to recilinear valve spool motion,

a clutch sleeve surrounding said shaft and slidable axially along said shaft to clutch said shaft to and unclutch said shaft from said worm wheel,

spring means urging said clutch sleeve into clutching engagement,

a trunnion mounted on an end of said clutch sleeve, and

a manual operation mounted on said trunnion beyond one end of said shaft for rotating said shaft when said shaft is unclutched from said worm wheel,

said handle being pivotally mounted to swing on said trunnion about an axis at right angles to said shaft axis from a first position in which said handle is disconnected from said shaft to a second position in which said handle is engaged with said shaft to rotate it, and

cam means being provided on said handle whereby said clutch sleeve is cammed axially out of clutching engagement against the action of said spring when said handle is swung into said second position.

4,285,497
ELECTROMAGNETICALLY ACTUATED VALVE

Otto Göttel, Ingelfingen, Fed. Rep. of Germany, assignor to Burkert GmbH, Ingelfingen, Fed. Rep. of Germany

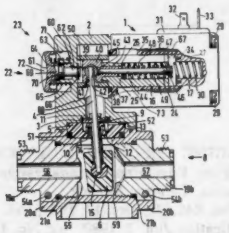
Continuation of Ser. No. 906,283, May 15, 1978. This application Oct. 29, 1980, Ser. No. 201,897

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1977, 2724901

Int. Cl.³ F16K *11/02, 1/16, 31/10*

U.S. Cl. 251—138 **1 Claim**

1. A direct-acting magnetic valve for fluid media comprising an actuating unit, a magnetic actuating system including an armature connected to said actuating unit, said armature being movable in one direction by magnetic force and a primary return spring for moving said armature in the opposite direction, a valve unit having a housing connected to said actuating unit, said valve unit including at least one valve seat and a movable valve closing member disposed within said housing, means for transmitting the motion of said armature to said closing member for closing engagement with said at least one valve seat, a secondary spring disposed between said armature and said motion transmitting means concentrically with said primary return spring, said secondary spring being adapted to permit an additional movement of said armature by said magnetic actuating system with lost motion upon the termination of the action of said motion transmitting means into a final position relative to said motion transmitting means, said secondary spring exerting a compression force in the opposite direction of movement of said armature after the return of said armature from said additional movement caused by said lost motion between said armature and said motion transmitting means, said motion transmitting means including a rod having one end connected to said movable valve closing member and pivot means for connecting the other end of said rod to said armature with said rod being disposed in substantially verti-



cally extending relationship with respect to the axis of said armature, said motion transmitting means including a drawing pin, means for supporting said pin for transverse play, said armature being continuously urged in said opposite direction by said primary return spring, said secondary spring comprising a compression spring disposed between said pin and said armature, said armature being provided with an axially disposed hollow space forming a shoulder at one end, said motion transmitting means including a pivotal joint, said pin being disposed centrally in said armature hollow space, said pin supporting means including said pivotal joint, one end of said pin including a nut said compression spring being disposed between said pin with one end in engagement with said nut and said shoulder and said return spring being disposed in surrounding relationship with said compression spring within said hollow space with one end in contact with said shoulder and the other end in contact with said housing.

4,285,498
CONTROL VALVES

Douglas D. J. Nightingale, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

Filed May 9, 1977, Ser. No. 795,306

Claims priority, application United Kingdom, May 17, 1976, 20196/76; Jul. 29, 1976, 31652/76

Int. Cl.³ F16K *41/00*; F16V *31/50*

U.S. Cl. 251—214 **6 Claims**

1. A valve for controlling fluid flow, comprising

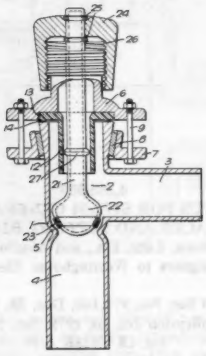
a hollow body having a flow passage for the fluid;

a sealing member formed of flexible polymeric material and consisting essentially of a generally radially resilient tubular portion encircled by at least one radially extending flange, the sealing member being supported within the hollow body by said radially extending flange;

a movable spindle comprising means for occluding the flow passage during operation of the valve and a stem connected to or integral with the occluding means, the spindle passing through the tubular portion of the sealing member with the exterior surface of the spindle adjacent to the interior surface of the tubular portion; and

means for defining at least one generally radially rigid annu-

lar ridge extending from one of said adjacent surfaces to contact the other and positioned so that at least during normal operation of the valve it remains displaced axially along said sealing member from the plane of each of said at least one radially extending flange, said ridge being oversized in that it stands proud from the surface from which it extends by an amount greater than the difference



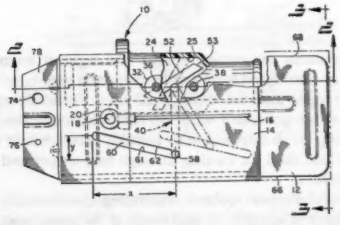
between the diameters of said two adjacent surfaces as measured before assembly of the valve, so that in the assembled valve the annular region of said tubular portion overlying said annular ridge, and said annular ridge, and the surface which said annular ridge contacts, are biased together by resilient radial distension of said tubular portion, thereby to provide a gland seal against loss of the fluid from the valve body.

4,285,499

CAM ACTUATED BUTTERFLY VALVE

Keith E. Zukausky, St. Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 5, 1979, Ser. No. 17,518
Int. Cl.³ F16K *31/524*
U.S. Cl. 251—229 **11 Claims**



1. A fluid valve assembly for modulating fluid flow therethrough actuated by a linear input means, said valve assembly comprising:

(a) housing means defining a fluid flow passage therethrough and a valve seat within said fluid flow passage, said housing means including structure defining at least one exterior guide surface;

(b) a butterfly valve member rotatably mounted to said housing means, said valve member being movable between a closed position engaging said valve seat and an open position spaced from said valve seat;

(c) crank means having a first portion connected to said butterfly valve member for providing said rotary movement, a second portion extending exteriorly of said housing means, said second portion including a cam follower portion;

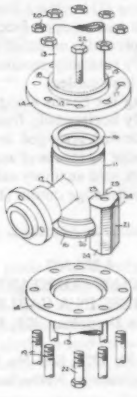
(d) actuator means slidably received on said exterior guide surfaces and movable linearly relative to said housing means between a first and second position in response to actuation by said linear input means, said actuator means defining a cam surface engageable with said cam follower portion, said crank means rotatable in response to movement of said actuator means such that in said first position said valve member is closed and in said second position said valve member is open, said cam surface being aligned relative to the direction of motion of said actuator means such that while said actuator means is in or near said first position, a given movement of said actuator means produces lesser movement of said cam follower portion relative to said housing means.

4,285,500

STUD BLOCK FOR AN ECCENTRIC ROTARY VALVE

Henry Illing, Parksville, and Chauncey Newkirk, Wurtsboro, both of N.Y., assignors to Kieley & Mueller, Inc., Middletown, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,516
Int. Cl.³ F16K *5/00*; F16L *41/00*
U.S. Cl. 251—367 **7 Claims**



1. In combination,

a housing for an eccentric rotary control valve, said housing having a cylindrical body part disposed on a longitudinal axis and a neck part disposed on an axis extending in radially offset relation from said longitudinal axis of said cylindrical body part;

a pair of flanges disposed about opposite ends of said cylindrical body part, each said flange having equi-spaced apertures therein;

a plurality of draw bolts extending coaxially of said cylindrical body part and through at least some of said apertures in said flanges to secure said flanges together;

a stud block disposed perpendicularly between said flanges in alignment with a pair of coaxial apertures in said flanges, said block being disposed between one of said draw bolts and said neck part and having a recess partially encompassing said neck part; and

a pair of cap screws, each cap screw passing through a respective flange aperture into coaxial threaded engagement with said stud block, said cap screws and said draw bolts being disposed at equal spacings about said flanges.

4,285,501

APPARATUS FOR RETAINING GUIDE PULLEYS FOR LOAD CABLES OF A BUILDING FRONT CABLE LIFT IN A HOUSING STATIONARILY ARRANGED AT THE TOP OF A BUILDING

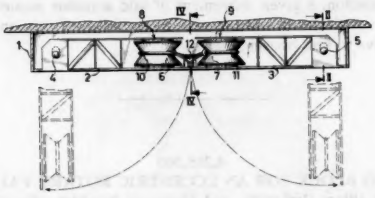
Erich Schneider, Emmelshausen, Fed. Rep. of Germany, assignor to Kombi-Lift Montage- und Handelsgesellschaft mbH, Solingen, Fed. Rep. of Germany

Filed Mar. 21, 1980, Ser. No. 132,573

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1979, 2911029

Int. Cl.[3] B66D *3/06*

U.S. Cl. 254—394 3 Claims



1. An apparatus for retaining guide pulleys for load cables of a building front cable lift in a housing stationarily arranged at the top of a building, from which housing said guide pulleys are outwardly pivotable from ground, said apparatus comprising

(a) an elongate housing (1) having a base (13), a rear wall, a top wall, end walls and an open face;

(b) two beams (2,3) pivotally mounted in the housing;

(c) guide pulleys (6,7) rotatably mounted in the beams and arranged to guide load cables;

(d) means for pivoting the beams along with the guide pulleys (6,7) outwardly horizontally from the housing;

(e) an interlocking device arranged in the interior of the housing and releasable by means of auxiliary cables guided on the guide pulleys, said auxiliary cables passing through and depending from an edge cutout (12) in the base (13) of the housing (1).

4,285,502

DEVICE FOR KEEPING CONSTANT THE TENSILE STRESS IN A CABLE

Dirk J. C. Lub, Dirk de Derdelaan 309, Vlaardingen, Netherlands

Filed May 31, 1978, Ser. No. 911,106

Claims priority, application Netherlands, Jun. 1, 1977, 7706008

Int. Cl.[3] B66D *1/36*

U.S. Cl. 254—398 6 Claims

1. Device for keeping constant the tensile stress in a cable or the like, comprising two guide pulleys for the cable disposed in one plane at a distance from each other and at least one pulley disposed between the two said guide pulleys and in the same plane, said at least one pulley being secured to a piston-cylinder unit in such a manner than an essentially constant force is exerted upon the pulley owing to the interior of the cylinder communication with an hydraulic system for the purpose of maintaining an essentially constant hydraulic pressure within the cylinder, the intermediate pulley in the operative position guiding the cable from the one guide pulley to the other while forming a loop, characterized in that means are provided to move the guide pulleys and the cable with respect to each other and that the piston-cylinder unit is constructed in such a manner that the intermediate pulley can be moved out of engagement with the cable, the guide pulleys being mounted on a frame mounted for movement perpendicularly to the plane of the pulleys and the piston-cylinder unit with the intermediate pulley being likewise mounted on said frame.

4,285,503

APPARATUS FOR STEAM GENERATOR TUBE WRAPPER SPACER AND SUPPORT BLOCK REMOVAL

Gregory L. Calhoun, Lutz, Fla., and Angelo Cassette, Greensburg, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 974,160, Dec. 28, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,857

Int. Cl.[3] B23K *7/10*

U.S. Cl. 266—71 8 Claims

1. Apparatus for cutting spacer and support members extending at distributed locations between the tube-bundle-encircling wrapper and the outer shell of a vertically-extending nuclear steam generator with top removed, comprising:

a cutting torch disposed in an annulus between said wrapper and said shell for cutting through said spacer and support members,

a vertical support column extending downwardly in said annulus in support of said torch at its lower end,

said support column including a plurality of longitudinal separably-interconnected sections,

an elongated guide member extending above the upper edge of said wrapper and including a rack extending along the length thereof,

vertically movable motorized carriage means on said guide member in motion-driving position-securing cooperation with said rack,

horizontally adjustable arm means carried by said carriage means,

column-supportable releasable clamp means on said arm for clamped support of said column, and,

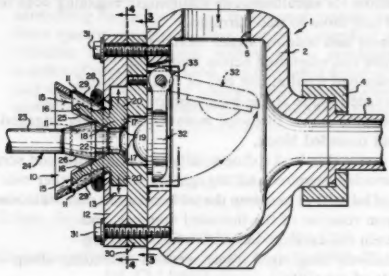
conduit means extending along said column for conveying operating gas to said cutting torch.

4,285,504

TUYERE SEALING MEANS AND SILENCER

Beal H. Colvin, Claypool, Ariz., assignor to Inspiration Consolidated Copper Company, Inspiration, Ariz.

Filed Dec. 3, 1979, Ser. No. 99,633
Int. Cl.³ C21B 7/16
U.S. Cl. 266—266 6 Claims



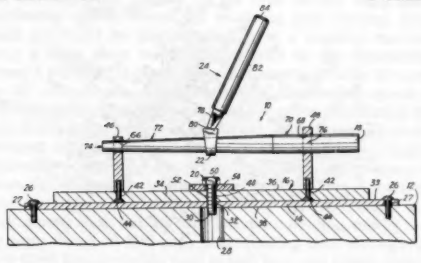
1. A tuyere sealing means and silencer comprising a bell-shaped nozzle, a plurality of axially extending guide slots in said nozzle, a radially movable ramp-type valve element in each said guide slot adapted to be engaged by a punch rod wherein each said valve element has an arcuate segment, a ramp segment movable in said guide slot, and an axial center segment joining said ramp segment and said arcuate segment, and spring means urging all of said valve elements inwardly towards each other.

4,285,505

APPARATUS FOR USE IN FORMING A FINISH ON A JEWELRY BAND

Abraham Winzelberg, 3620 Bowne St., Flushing, N.Y. 11354

Filed Dec. 26, 1979, Ser. No. 106,937
Int. Cl.³ B25B 5/14
U.S. Cl. 269—50 5 Claims



1. Apparatus for holding a ring in place on a mandrel placed on a work surface while the surface of the ring is sculpted by the hammering of a stamping die against the surface of the ring, said apparatus comprising

a flat base plate having a threaded aperture therethrough,

a chassis comprising a flat chassis plate resting on said base plate,

said chassis plate having an aperture which is in registry with the aperture of said base plate,

said work surface having a recess adapted to be in registry with said apertures,

a pair of opposite vertical supports fixedly attached to said chassis plate with each of said supports having respective apertures therethrough, said apertures of said supports being in horizontal alignment,

an elongated mandrel having a frusto-conical shaped portion for allowing the mounting of a jewelry band thereon, said mandrel being press fit into said apertures of said supports to allow rigid mounting of the mandrel on the support,

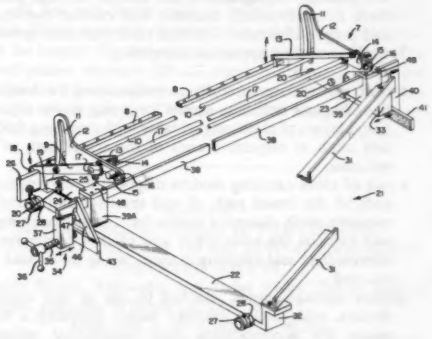
and a threaded member for passing through said apertures of said base plate and said chassis plate to be threaded into said threaded aperture of said base plate to firmly secure said chassis to said work surface when said threaded member is tightened in said threaded aperture of said base plate, said threaded member being loosened to permit horizontal repositioning of said chassis with respect to said work surface, the vertical position of said mandrel being fixed with respect to said work surface in accordance with the location of the apertures in said opposite vertical supports.

4,285,506

CLOTH SPREADING AND CLAMPING APPARATUS

Nyal J. Weaver, 12345 Colby Dr., Mishawaka, Ind. 46544, and William F. Teal, 16630 County Rd. 10, Bristol, Ind. 46507

Filed Nov. 12, 1976, Ser. No. 741,394
Int. Cl.³ B65H 29/46
U.S. Cl. 270—30 31 Claims



1. Cloth spreading apparatus comprising:

a table,

a catcher carriage guide track fixedly disposed on said table and extending longitudinally thereof,

a cloth spreader reciprocally movable along the length of the table and including means for laying down superimposed layers of cloth on said table with reversing folds in said cloth at respective ends of the travel path of the spreader,

a pair of cloth catching devices disposed at the respective ends of the travel path of said spreader and including movable cloth clamping means for selectively clamping said cloth at the table while said cloth spreader travels intermediate said catching devices laying down said layers, and

a catcher carriage supportingly carrying one of said catching devices for movement between a plurality of operating positions along the length of the table, said catcher carriage means including:

rigid frame means rigidly connected to said one catching device said rigid frame means including first and second longitudinally extending frame members disposed at respective opposite lateral sides of said one catching device, and a transverse frame member interconnecting said first and second frame member,

catcher carriage guide means engageable in said catcher carriage guide track for continuously maintaining said catcher carriage and said one catching device in proper alignment with said table and cloth spreader for all adjusted positions of said one catching device along the length of the table,

and releasable carriage holding means for releasably holding said catcher carriage in respective adjusted positions along the length of the table, wherein said releasable carriage holding means is operable from one side of said table and wherein all portions of said carriage which extend transversely of said table across portions covered by layers of materials during cloth spreading by said cloth spreader are disposed sufficiently above the level of the table to accommodate movement of said catcher carriage and catcher to positions for spreading layers of shorter length on existing longer length layers of cloth utilizing a continuous bolt of cloth on said cloth spreader, wherein said catcher carriage includes carriage wheel means arranged at respective opposite sides of said carriage for accomodating relatively frictionless longitudinal adjusting movement of the catcher carriage along said table independently of the cloth spreader, and wherein said catcher carriage guide means includes portions of said carriage wheel means, wherein said first frame member has opposite longitudinal ends and is substantially longer than said second frame member, wherein said carriage wheels means includes first and second guide wheels bearingly supported adjacent respective opposite longitudinal ends of said first frame member, and wherein said guide wheels are guidingly engageable in said catcher carriage guiding track to continuously maintain said catcher carriage in said proper alignment with said table and cloth spreader.

7. Cloth spreading apparatus comprising:

a table,

a cloth spreader reciprocally movable along the length of the table and including means for laying down superimposed layers of cloth on said table with reversing folds in said cloth at respective ends of the travel path of the spreader,

a pair of cloth catching devices disposed at the respective ends of the travel path of said spreader and including movable cloth clamping means for selectively clamping said cloth at the table while said cloth spreader travels intermediate said catching devices laying down said layers, and

catcher carriage means attached to one of said catching devices, said catcher carriage means including a roller means for accomodating easy longitudinal adjusting movement of said catcher carriage means and releasable carriage holding means for releasably holding said carriage in respective adjusted positions along the length of the table,

wherein the catching device attached to said catcher carriage includes guide arms attached to a cloth clamping bar which are disposed above a transversely extending guide rod that travels in curved guide slots at support brackets at opposite sides of said table, and wherein the other catching device has corresponding guide arms disposed below a corresponding guide rod, and

wherein the carriage includes a frame having

a relatively long rigid frame member extending along one side of the table,

a relatively short rigid frame member extending along the other side of the table,

and a transverse rigid frame member also serving as a handle attached to said long and short frame members.

15. Cloth spreading apparatus comprising:

a table,

a cloth spreader reciprocally movable along the length of the table and including means for laying down superimposed layers of cloth on said table with reversing folds in said cloth at respective ends of the travel path of the spreader,

a pair of cloth catching devices disposed at the respective ends of the travel path of said spreader and including movable cloth clamping means for selectively clamping said cloth at the table while said cloth spreader travels intermediate said catching devices laying down said layers,

catcher carriage means attached to one of said catching devices, said catcher carriage means including roller means for accommodating easy longitudinal adjusting movement of said catcher carriage means and releasable carriage holding means for releasably holding said carriage in respective adjusted positions along the length of the table,

wherein said holding means includes a single hand operable handle for simultaneously clampingly engaging both sides of said table to said carriage,

wherein said holding means includes:

a brake rod extending across said table,

a brake pad fixed at one end of said brake rod,

a threaded block at the other end of said brake rod,

a rotatable screw threaded member threadably engaged in said threaded block,

and a movable brake shoe axially movable with said screw threaded member and engageable with the other side of said table so as to clamp the table between said brake shoes upon rotation of the threaded member, and

wherein the carriage includes a frame having

a relatively long rigid frame member extending along one side of the table,

a relatively short rigid frame member extending along the other side of the table,

and a transverse rigid frame member also serving as a handle attached to said long and short frame members,

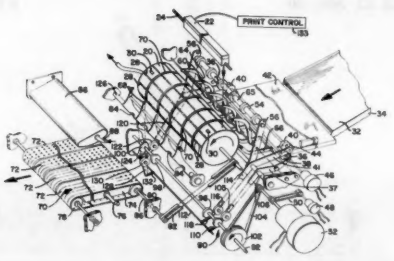
and wherein a brake rod guide block is fixed to each of said long and short frame members, said guide blocks including guide slots for slidably guiding said brake rod.

4,285,507

INK JET PRINTER

George Marinoff, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 7,999, Jan. 31, 1979, Pat. No. 4,225,872.
This application Feb. 1, 1980, Ser. No. 117,688
Int. Cl.[3] B65H *5/12, 9/06, 29/56*
U.S. Cl. 271—3 **11 Claims**



1. A sheet handling system for transporting a sheet of material past a work station, comprising:

rotatable support means including a sheet supporting drum, mounted adjacent said work station, for supporting a sheet of material,

rotary drive means for rotating said support means,

sheet supply means for loading a sheet onto sid support means such that said sheet is supported thereby, said sheet supply means including

a pair of sheet supply rollers for engaging a sheet therebetween and transporting the sheet so engaged toward said sheet supporting drum,

a sheet stop between said supply rollers and said drum, movable into a sheet engaging position for positioning a sheet prior to engagement by said supply rollers,

a sheet deflector positioned adjacent said drum such that a sheet transported towards said drum by said supply rollers

is directed into a path substantially tangential to the periphery of said drum, and

a drum contacting roller, mounted for movement into contact with said drum, for pressing a sheet against said drum as the sheet is loaded onto said drum,

sheet ejector means for removing said sheet from said support means, and

control means, driven by said rotary drive means in fixed relation to rotation of said rotatable support means, for controlling operation of said sheet supply means and said sheet ejector means such that a sheet is supplied to said rotatable support means, rotated for a predetermined number of rotations thereon, and thereafter removed from said support means after transportation of said sheet past said work station a predetermined number of times.

4,285,508

COLLATOR

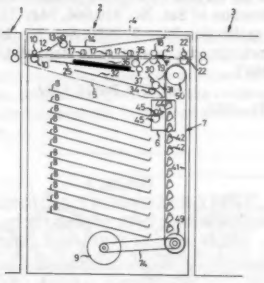
Tamaki Kaneko, Fujisawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,768

Claims priority, application Japan, Dec. 29, 1978, 53-161793

Int. Cl.³ B65H *39/11, 39/07*

U.S. Cl. 271—4 **8 Claims**



1. An improved collator of the type having copy sheet distributing means, means for receiving and carrying copy sheets produced by and supplied from a copying machine along a copy sheet transportation path to the distributing means, a plurality of bins arranged in a vertical array for storing the copy sheets, and wherein the distributing means is movably arranged along inlets of the bins for distributing the copy sheets from the receiving and carrying means to a predetermined one of said bins, the improvement, in combination therewith, comprising a copy sheet feeding table mounted above the vertical array of bins and arranged out of the copy sheet transportation path for receiving the copy sheets in a stack, a copy sheet feeding mechanism for sending, one by one, the copy sheets on said copy sheet feeding table through the copy sheet transportation path to said bins, and means removably mounted above the copy sheet feeding table and enclosing the copy sheet transportation path operable to expose the feeding table and the copy sheet transportation path thereby permitting the removal of copy sheets jammed in the transportation path and the setting of copy sheets on the feeding table.

4,285,509

FEEDER MECHANISM

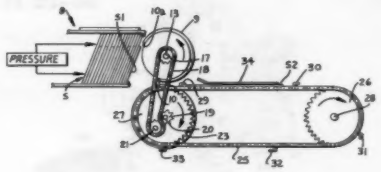
Laurie M. Reid, Luthersville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 14, 1979, Ser. No. 94,292

Int. Cl.³ B65H *5/30*

U.S. Cl. 271—10 **4 Claims**

1. A feeder mechanism comprising a hopper (8) having a plurality of open-ended, collapsed carrier sleeves (S) stacked in said hopper, each sleeve having a transverse fold line (7) defining an inner major part (7*b*) and an outer minor part (7*a*) each folded upwardly into flat face contacting relation with each other, a horizontal rotatable hollow cylindrical feeder element (9) having an open feeder slot (10) formed therein and disposed in parallel relation to the axis thereof, bearing means (15,16) arranged to support said feeder element adjacent said hopper in such manner that rotation of said feeder element in one direction causes the upper portion (1*a*) of said minor part (7*a*) of the outermost sleeve to move into the interior of said feeder element through said slot (10) so as to effect withdrawal of



such outermost sleeve from the hopper (10), means (17, 18) for rotating said feeder element in said one direction, a horizontal, rotatable feed roll (23) disposed below said feeder element, said feed roll and said feeder element being arranged to receive sleeves (S) in sequence therebetween which are withdrawn from the hopper (8), and endless conveyor means (25) having spaced pusher elements (29–33) thereon arranged to receive said sleeves (S) in sequence from between said feed roll (23) and said feeder element (9), said slot (10) being arranged to receive and to discharge said pusher elements in sequence.

4,285,510

SHEET FEEDING CASSETTE FOR COPYING APPARATUS CAPABLE OF RECEIVING MANUALLY INSERTED SHEETS

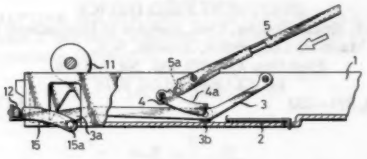
Tadaaki Kanno, Yokosuka, and Tadao Koike, Tokyo, both of Japan, assignors to Ricoh Co. Ltd., Japan

Filed Nov. 1, 1979, Ser. No. 90,280

Claims priority, application Japan, Nov. 13, 1978, 53/155975[U]

Int. Cl.³ B65H *1/08*

U.S. Cl. 271—127 **7 Claims**

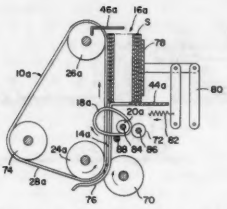


2. In a copying apparatus having at least one cassette in position for carrying a stack of sheets, a feed roller for feeding one sheet at a time from the cassette in position in the copying apparatus and a pressure applying lever movable into a position for bringing the stack into engagement with the feed roller, an improvement comprising, cassette lid means movably mounted to the cassette and engageable with the pressure applying lever to move the pressure applying lever out of its position for bringing the stack into engagement with the feed roller, said cassette lid means having an upper lid pivotally mounted to the cassette so that a rear part of the lid can be moved into an open position for bringing the stack out of engagement with the feed roller when the cassette is in position in the copying apparatus, whereby a manually inserted sheet can be inserted into the cassette at the top of the stack.

4,285,511
METHOD AND APPARATUS FOR STACKING SHEETS SUCH AS PAPER CURRENCY

Masahiro Abe, Kawaguchi, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Himeji, Japan

Filed Jun. 10, 1980, Ser. No. 158,087
Claims priority, application Japan, Jun. 14, 1979, 54-75417
Int. Cl.[3] B65H *29/40*
U.S. Cl. 271—178 9 Claims



1. An apparatus for stacking sheets, such as paper currency, being fed one by one and with spacings therebetween along a prescribed path, comprising:

(a) means for feeding the successive sheets to be stacked along said path;

(b) a stacking compartment on said path for receiving the successive sheets and holding same as a stack;

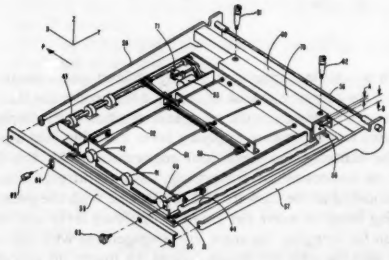
(c) at least one belt of relatively pliant material disposed immediately upstream of the stacking compartment and supported at a fixed point on the same side of said path as the stacking compartment so as to form a free loop normally crossing said path, the free loop of the belt being capable, when pressed by each sheet traveling along said path, of engaging the upstream edge of the stack of sheets in the stacking compartment and of moving same way from said path, whereby each new sheet is fed to a position between said path and the stack of sheets in the stacking compartment; and

(d) means for withdrawing the free loop of the belt from between the stack of sheets and each new sheet following the completion of the feeding of the new sheet into the stacking compartment.

4,285,512
DOCUMENT FEED DEVICE

Myron F. Shlatz, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,636
Int. Cl.[3] B65H *5/06, 9/16*
U.S. Cl. 271—233 15 Claims



1. A paper feed device for use with a document copying machine for moving documents to be copied across a horizontal document glass comprising:

paper forwarding means positioned above said horizontal document glass and in relationship thereto for moving said documents across said glass;

drive means including drive shafts for propelling said paper forwarding means;

mounting plate means upon which said drive means and said paper forwarding means are mounted;

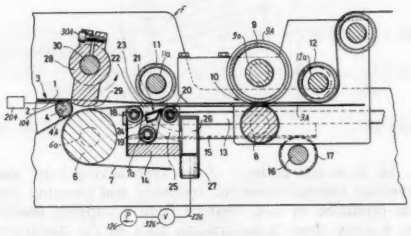
stationary reference means for positioning said mounting means above said document glass to achieve the relationship desired in a vertical plane between said paper forwarding means and said glass; and

frame means for carrying said mounting means slidably fastened thereto to allow said mounting means to float in a vertical plane relative to said frame means.

4,285,513
METHOD AND APPARATUS FOR FORMING A STREAM OF PARTLY OVERLAPPING PAPER SHEETS OR THE LIKE

Hans-Dieter Kwasnitza, Neuffen, Fed. Rep. of Germany, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Continuation of Ser. No. 910,066, May 26, 1978. This application May 9, 1980, Ser. No. 148,220
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1977, 2725547
Int. Cl.[3] B65H *5/34*
U.S. Cl. 271—270 22 Claims



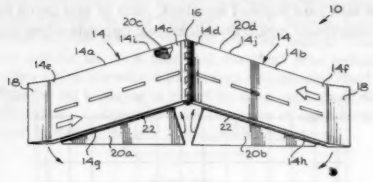
1. A method of forming a stream of partially overlapping flexible sheets, comprising the steps of transporting a series of discrete spaced-apart non-overlapping sheets at a relatively high first speed in a predetermined direction along a predetermined path; decelerating successive sheets of said series in a first portion of said path to a lower speed whereby each sheet following the respective preceding sheet in said first portion of said path catches up with the preceding sheet in a second portion of said path upstream of said first portion, as considered in said direction; deflecting the trailing portion of each preceding sheet at a first deflecting station as it travels at said lower speed past said first station and when there is no gap in said series of discrete sheets due to the absence of at least one sheet in said series, said deflection occuring substantially immediately before the following sheet catches up therewith so that the leader of each following sheet overlies the trailing portion of the respective preceding sheet before the following sheet enters into and is decelerated in said first portion of said path; and deflecting the trailing portion of a decelerated sheet as it travels at the lower speed past a second deflecting station downstream from said first station, as considered in said direction when said series of discrete sheets exhibits a gap as a result of the absence of at least one sheet in said series so that the trailing portion of the sheet preceding a gap is deflected substantially immediately before the sheet following such gap catches up therewith.

4,285,514

RAMP DEVICE FOR PRACTICING WHEELED SPORTS

Robert Romero, 5018 Granada St., Los Angeles, Calif. 90042

Filed Jan. 25, 1980, Ser. No. 115,605
Int. Cl.[3] A63G 31/00
U.S. Cl. 272—3 2 Claims



1. A ramp device for practicing wheeled sports thereon, comprising:

(a) A plurality of rectangular plates of rigid material, edge portions of which are arranged in juxtaposition to each other;

(b) a continuous hinge, extending connectively along and between the juxtaposed edge portions of the rectangular plates;

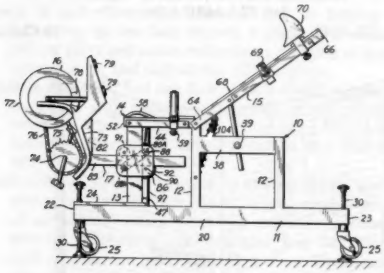
(c) triangularly shaped flaps of rigid material, one edge portion of which is connected hingedly and supportively to oppositely extending edge side portions of the rectangular plates, respectively, whereby the rectangular plates may be placed stationarily in inclined positions relative to each other.

4,285,515

SURGICAL ERGOMETER TABLE

Daniel Y. Gezari, 317 Bradley Blvd., Bethesda, Md. 20034

Filed Oct. 3, 1979, Ser. No. 81,565
Int. Cl.[3] A63B 23/04, 69/16
U.S. Cl. 272—73 5 Claims



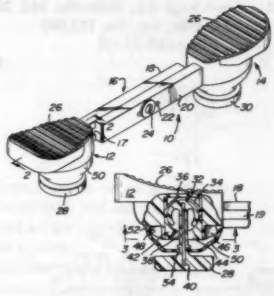
1. An improved surgical table for supporting a patient for the development of cardiac stress while performing a cardiac scan, comprising: a horizontal base adapted to be supported upon a floor and having first and second ends; a platform supported in horizontal position adjacent one of said ends at a level substantially in the plane of said base element; a first support element extending upwardly from said base element medially of said ends; a generally planar back rest having a first end pivotally connected to said first support element, and having means for adjustably positioning the angular inclination thereof relative to the horizontal; a second support element extending upwardly from said base element and adjacent said first support element; a seat element positioned adjacent said first end of said back rest and supported in substantially horizontal position by said second support element; said second support element including first and second vertical members defining an interstice; and an ergometer support element including a horizontal beam adjustably supported for longitudinal and vertical movement relative to said base element in said interstice.

4,285,516

AMUSEMENT AND/OR EXERCISING DEVICE

Richard Heatwole, Decatur, Ill., assignor to James A. Southerland, Marshall, Ill., a part interest

Filed Feb. 7, 1980, Ser. No. 119,327
Int. Cl.[3] A63B 23/04
U.S. Cl. 272—146 7 Claims



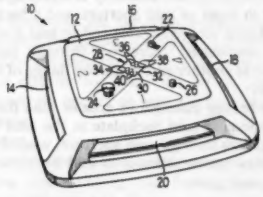
1. An amusement and/or exercising device comprising first and second pads spaced from each other, each pad being adapted to support one leg of a person, means extending between and rigidly interconnecting said pads, a discrete ground engaging element below and associated with each pad, the improvement comprising means defining a bearing socket approximately ¾ of a sphere on the bottom of each pad, a generally spherical bearing in each socket, each bearing being rigidly connected to one of said ground engaging elements, each pad being pivotable relative to its associated element through a limited art to thereby facilitate tilting the pads as a unit so that one pad is higher than the other and off the ground, and each bearing permitting its pad to rotate relative to its associated ground engaging element about a vertical axis.

4,285,517

ADAPTIVE MICROCOMPUTER CONTROLLED GAME

Howard J. Morrison, Deerfield, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,938
Int. Cl.[3] A63B 71/06
U.S. Cl. 273—1 GC 44 Claims



1. A game device comprising:

means for automatically generating a sensorially perceptible event, said event having a predetermined physical characteristic having a predetermined value;

means for automatically generating a plurality of values, one of which is a simulation of said value;

means actuable by a participant for entering into said device an estimate of when said predetermined value has been

simulated by means of a single actuation of said participant actuable means; and

means coupled to said participant actuable means and to said event generating means for comparing said value and said estimate and for providing a first indication if said estimate corresponds to said value within a predetermined margin or error and for generating a second indication if said estimate does not correspond with said value within said predetermined margin of error.

4,285,518

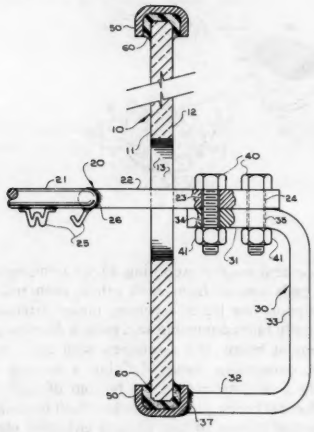
BASKETBALL GOAL

John M. Pearo, 3211 Castleleigh Rd., Beltsville, Md. 20705

Filed Jan. 14, 1980, Ser. No. 112,093

Int. Cl.[3] A63B *63/08*

U.S. Cl. 273—1.5 R **1 Claim**



1. A basketball goal comprising,

a glass backboard,

a metallic channel frame completely surrounding said backboard,

a continuous resilient seal interposed between the surface of the glass backboard and the metallic channel frame to act as a shock absorber between the frame and backboard,

an aperture in said backboard,

a mounting bracket comprising a top flange, a bottom flange and a web connecting said top and bottom flanges, the bottom flange being secured to said frame below said aperture, and said top flange being positioned behind and centrally disposed with respect to said aperture, and

a goal hoop assembly, said assembly comprising a goal hoop positioned in front of said aperture and a backplate, said backplate being secured at one end to said goal hoop and extending rearwardly therefrom through said aperture and secured at another end to the top flange of said mounting bracket,

said aperture having dimensions greater than the cross section dimensions of said backplate in the area where said backplate passes through said aperture, whereby said goal assembly may move relative to said backboard without contacting said glass.

4,285,519

PING-PONG POKER

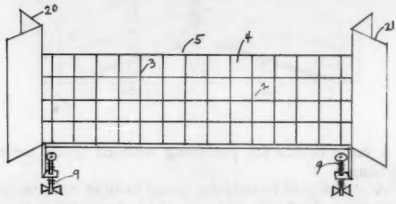
Jose E. di Donato, 3545 Island Rd., Wantagh, N.Y. 11793

Filed Mar. 4, 1980, Ser. No. 127,104

Int. Cl.[3] A63B *39/00*

U.S. Cl. 273—30 **3 Claims**

1. A guide-ball card game comprising: the combination of a smooth, hard surface platform table and a gallery card rack extending across a central part of said table; said rock comprising a plurality of horizontally and vertically spaced card support members; a vertically extending support post attached at each end of said card support members for holding said members in said spaced relationship; each of said support posts having clamping means for attaching said rack to said table; an arry of playing cards positioned within said space between each of said card support members; each of said cards having a first attachment means on at least two opposite edges thereof;



said card support members having second attachment means thereon whereby said cards are releasably attached thereto and held vertically between said card support members, said cards being releasable from said rack when impacted on either side thereof by a ball during game play; means on said rack for compartmentalizing each of said spaces between said support members, each compartment being of a size to have a said card therein; means defining a shield at each end of said rack, said shield being positioned such that a ball impinged thereagainst will be deflected back to a player.

4,285,520

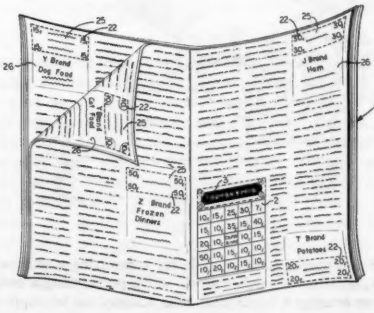
MASS CIRCULATION PUBLICATION BINGO TYPE GAME

Maynard E. Small, 105 Ward Pkwy., Apt. #507, Kansas City, Mo. 64112

Filed Sep. 26, 1979, Ser. No. 79,189

Int. Cl.[3] A63F *3/06*

U.S. Cl. 273—240 **10 Claims**



1. A game of the type known as "bingo" for players comprising:

(a) a single edition of a printed run of press, multi-page, and mass circulation publication;

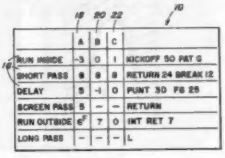
(b) a playing card common to all players printed in said publication, said card having a grid with several rows and columns forming a set of oriented areas, each oriented area respectively bearing individual indicia whereby every player has a identical playing card having an identical set of oriented area indicia; and

(c) a set of devices common to all players printed in said publication, at least a portion of said devices being posi-

tioned at various isolated locations throughout the pages of the publication as to be spaced apart from one another by printed subject matter unrelated thereto, each device respectively bearing individual indicia, whereby every player has an identical set of indicia bearing devices; at least a portion of said devices being located on pages separate from said playing card;

(d) said area indicia and said device indicia being cooperatively related, in that selected device indicia from the device indicia set match with selected indicia from the area indicia set such that said matched area indicia describes a predetermined pattern on said playing card grid; whereby each player is urged to scan each page of said publication to determine the presence of said devices in order to determine said predetermined pattern.

4,285,521
SIMULATED ATHLETIC GAME
Lewin G. Joel, III, Box 184, Cohasset, Mass. 02025
Filed May 8, 1978, Ser. No. 903,607
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—247 **2 Claims**



1. A device for simulating strategic play of a competitive athletic game comprising:

a deck of cards including a first set of in play offense and a second set of in play defense cards, the number of in play offense cards being greater than the number of in play defense cards;

each of said offense cards in said first set having means indicating, on one face thereof, a plurality of defendable offense plays and means indicating a plurality of groups of outcomes for said defendable offense plays;

indicia means, on said one face of each of said offense cards, associated with each of said groups of said plurality of outcomes, each of said indicia means being distinguishable from the other of said indicia means on said offense card; and

said defense cards being equal in number to the number of said indicia means, each of said defense cards bearing one of said indicia means whereby a particular outcome of a selected defendable offensive play may be determined with reference to matching indicia of an offense card with one of said defense cards, and

means defining a region on each of said offense cards for indicating a plurality of different undefendable plays and a single outcome adjacent each of said undefendable plays.

4,285,522
PATTERN GAME
Dale E. Turner, 5313 Halison St., Torrance, Calif. 90503
Filed Feb. 4, 1980, Ser. No. 117,825
Int. Cl.³ A63F *9/20*
U.S. Cl. 273—293 **9 Claims**

1. A game for establishing a pattern of identical squares in either a rank, a file or a diagonal comprising:

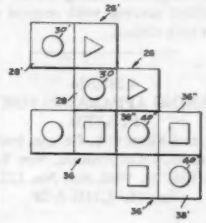
a first set comprising a plurality of identical three dimensional rectangles each divided into identical first squares and identical second squares,

said first and second squares on said first set of rectangles being separately identifiable from each other,

a second set comprising a plurality of identical three dimensional rectangles each divided into identical first squares and identical second squares,

said first and second square on said second set of rectangles being separately identifiable from each other,

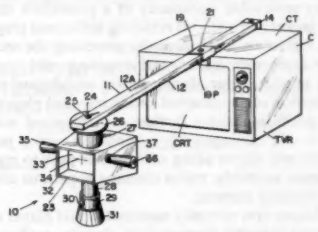
said first square on each rectangle of said first set being identical to said first square on each rectangle of said second set, and



said second square on each rectangle of said first set being different from said second square on each rectangle of said second set for establishing a total of three different identifiable squares,

whereby alternately placing rectangles from said first set and said second set in a touching relationship provides a contest for first establishing a pattern of identical squares in either rank, a file or a diagonal.

4,285,523
GAME AIMING DEVICE SECURABLE TO TELEVISION RECEIVER CABINET
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Filed Nov. 6, 1978, Ser. No. 958,057
Int. Cl.³ A63F *9/22*
U.S. Cl. 273—313 **12 Claims**



1. A game apparatus for use with a home style television receiver supported in a box-like cabinet wherein target images are generated on the display screen of said television receiver and scoring is effected by electronic circuit means which is operable to generate images on said display screen, said apparatus comprising:

a first support,

adjustable means secured to said first support for adjustably supporting and securing said first support to different cabinets of different television receivers containing television in picture display screens and wherein said first support extends substantially normal to the display screen of the television receiver to which said first support is secured,

a second support supported by said first support near the end of said first support and disposed thereby a distance away from the display screen of the television receiver,

an aiming device supported by said second support a substantial distance away from said display screen,

sighting means associated with said aiming device for aiming said aiming device at the display screen of said receiver,

manually operable means for moving said aiming device to permit said sighting means to be aimed at different locations of said screen, and

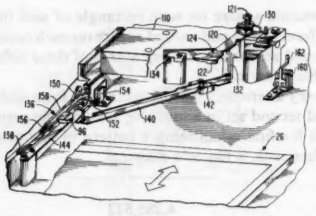
manually operable electrical control means including a switch supported by said second support and accessible to a hand of the operator operating said manually operable means for moving said aiming device and controllable thereby to effect scoring with respect to target images generated on said screen.

4,285,524

STYLUS CLEANING APPARATUS FOR VIDEO DISC PLAYER

Larry M. Hughes, and Kenneth L. George, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 21, 1980, Ser. No. 122,959
Int. Cl.³ G11B *3/58*
U.S. Cl. 369—71 **7 Claims**



1. In a record player including a pickup stylus subject to engagement with a record for recovering prerecorded information disposed thereon during playback; said stylus being mounted at one end of a stylus arm supported in a carriage which is subject to translatory motion along a path between a starting position and an ending position; said record being subject to removable occupancy of a protective caddy comprising a jacket and a record retaining spine; said player having a record extraction mechanism for removing the record/spine assembly from said jacket, and retaining said record/spine assembly in said player, during jacket withdrawal subsequent to the insertion of an occupied caddy into said player to a fully inserted position along a further path disposed substantially parallel to said carriage path; wherein an empty jacket is inserted into said player along said further path to retrieve said record/spine assembly; stylus cleaning apparatus comprising:

(A) a cleaning element;

(B) a cleaner arm movably mounted in said player and carrying said cleaning element; said cleaner arm being subject to engagement with said caddy during its travel to said fully inserted position in said player for effecting motion of said cleaner arm from a first position to a second position; said retained spine holding said cleaner arm at said second position during occupation of said player by said spine;

(C) means for biasing said cleaner arm toward said first position; and

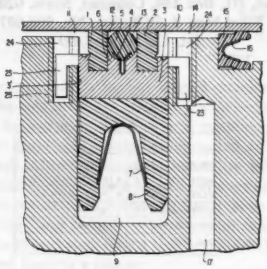
(D) an actuated latch member mounted in said player; said actuated latch member being subject to motion from a first location to a second location in response to insertion of said caddy into said player; said actuated latch member, while occupying said second location, engaging said cleaner arm during motion thereof from said second position toward said first position in response to caddy withdrawal for holding said cleaner arm at an intermediate position between said first position and said second position; said actuated latch member being subject to movement from said second location to said first location in response to withdrawal of said carry from said player, thereby releasing said cleaner arm to return to said first position; the location of said intermediate position of said cleaner arm being such that said cleaning element wipes said pickup stylus during motion of said cleaner arm from said intermediate position to said first position.

4,285,525

PRESSURE CUSHION SEAL FOR LAMINATING MACHINE

Kurt Held, Alte Strasse 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Feb. 22, 1980, Ser. No. 123,925
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907087
Int. Cl.³ F16J *15/24;* B30B *5/06*
U.S. Cl. 277—12 **5 Claims**



1. A slide surface seal for laterally sealing a pressure cushion formed between a pressure plate and a metal belt advancing parallel to the plate in a moving belt laminating machine operating according to the pressure cushion principle, said seal being arranged to be mounted in a groove formed in the pressure plate and to bear against the metal belt to laterally surround the pressure cushion and to establish a fluid seal therebetween the plate and the belt and said seal comprising: a seal mount of rigid material arranged to be inserted in the groove; at least one sealing strip secured to said mount and arranged to bear against the belt for maintaining a gap of minimum width between said seal and the belt; and an elastic sealing member secured to said mount adjacent the side of said sealing strip directed toward the interior of the pressure cushion and arranged to bear against the belt for maintaining losses of pressure medium from the cushion at a minimum.

4,285,526

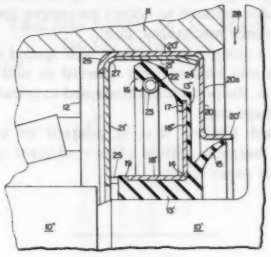
SEALING DEVICE FOR BEARINGS, ESPECIALLY ROLL BEARINGS

G. Rune Klinteberg; N. A. Bertil Johansson; B. Lennart Johansson, all of Landskrona, and Christer H. Dahlgren, Scalöv, all of Sweden, assignors to Stefa Industri Aktiebolag, Landskrona, Sweden

Filed Sep. 25, 1979, Ser. No. 78,812
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—153 **6 Claims**

1. Sealing device for bearings especially roll bearings, in which two sealing places (**15–20'**, **16–21''**) are provided in series, each comprising a sealing lip (**15**, **16**) made from an elastomer, and arranged on one single ring (**13**) made from the same elastomer for contacting a cylindrical surface at the sealing places, said sealing ring (**13**) being connected to a metallic liner (**18**), characterized thereby, that the sealing lips (**15**, **16**) are arranged to extend from one single ringshaped part (**13**) but at different radial distances from the axis of the sealing device, the sealing device being covered by a housing comprising two parts (**20**, **21**), one of said parts (**20**) having a Z-shaped

profile and the other one (21) having an L-shaped profile, so that the at least substantially cylindrical outermost parts of the two last mentioned parts (20, 21) tightly contact each other,



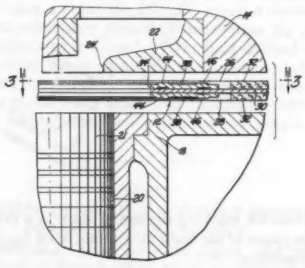
and the edge of the one (20) of them being folded over a cavetto shaped part of the other one (21), two cylindrical portions of the housing parts forming contact surfaces for respective ones of the two sealing lips (15, 16).

4,285,527

HEAD GASKET ASSEMBLY WITH METAL INLAYS

Terrence T. Connely, Southgate, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Apr. 25, 1980, Ser. No. 143,620
Int. Cl.[3] F16J 15/06
U.S. Cl. 277—235 B 7 Claims



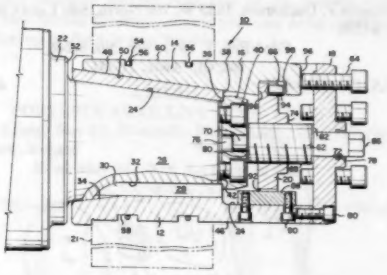
1. A head gasket assembly adapted to be disposed between a head having a precombustion chamber therein and a cylinder block having a cylinder therein with the precombustion chamber located at least partially outside the diameter of the cylinder and with a precombustion chamber insert disposed in the head for defining the passageway between the precombustion chamber and the cylinder, said gasket comprising; body means defining two parallel surfaces adapted to engage and seal the head and the cylinder block, said body means including a metal core having resilient material on said surfaces thereof and at least one cylinder opening for surrounding the cylinder, metal inlays fixedly secured to both of said surfaces of said core and extending completely about said cylinder openings and including integral extensions extending from said cylinder openings and in engagement with said metal core for engaging the chamber insert and the cylinder block to perfect a seal therebetween.

4,285,528

CHUCK ASSEMBLY

Nicolae Neamtu, Weymouth, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Apr. 18, 1980, Ser. No. 141,457
Int. Cl.[3] B23B 31/40
U.S. Cl. 279—2 R 11 Claims



1. A chuck assembly for clampimng a hollow work piece to a spindle comprising:

a hollow arbor adapted to slide over said spindle with grooves longitudinally extending along an outside arbor surface, said grooves having an inclined bottom surface;

means for securing said arbor to said spindle;

locking keys being slidingly disposed within said arbor grooves with an inclined surface in friction contact with said inclined surface of said grooves; and

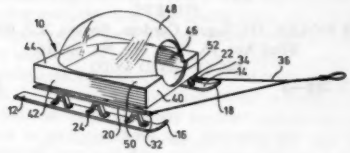
means dipsosed within said arbor for simultaneously moving said locking keys in a forward direction and a predetermined distance outside of said grooves against an internal wall of said work piece to centrally locate and clamp said workpiece to said arbor and for moving selected locking keys in a reverse direction back into said grooves to ease removal of said work piece from said arbor.

4,285,529

SLED WITH OCCUPANT PROTECTION

Ellen M. Vaillancourt, 3 Victoria St., Kapuskasing, Ontario, Canada (P5N 1K6)

Filed Sep. 4, 1979, Ser. No. 72,390
Int. Cl.[3] B62B 13/00
U.S. Cl. 280—12 R 4 Claims



1. A sled for transportation of passengers or cargo and comprising:

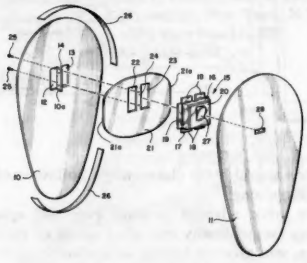
a frame;

mutually parallel snow traversing sled runners fixedly secured to said frame;

a passenger or cargo receiving enclosure mounted above the runners, said enclosure including a generally flat base with short side walls upstanding therefrom and a domed cover defining said enclosure therebetween, and a laterally presented access aperture provided in one side wall of the base and a side of the domed cover, said access aperture having a smooth continuous boundary edge;

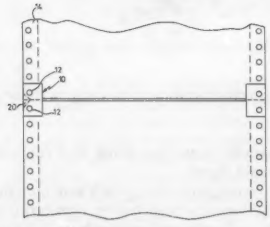
said enclosure being pivotally mounted to said frame for angular adjustment relative to the sled runners and the frame about a vertical axis, so as to vary the direction of lateral presentation of the access aperture relative to the sled runners.

4,285,530
HAND HELD SKIING STABILIZER
Jacques F. Ducourant, 1823 W. 700 North, Salt Lake City, Utah 84104
Filed Feb. 1, 1979, Ser. No. 8,248
Int. Cl.³ A63C *11/00*
U.S. Cl. 280—809 **6 Claims**



1. A hand-held skiing stabilizer comprising a pair of similarly shaped sheets of semirigid material; means attaching said sheets together about their edges; two holes through one of said sheets in spaced, side-by-side relationship forming a bar between the two holes so that a hand may be inserted to grasp the bar; box structure positioned between the two sheets to spread and hold the two sheets apart in the area of the handle, so that a hand grasping the bar does not pass through the second sheet, said box structure being of a size so that the edges of the box structure extend about the perimeter of the holes through the one sheet, and having flanges adjacent to one of the sheets; a reinforcing piece, smaller than the sheets, attached to one of the sheets and arranged to hold the flanges of the box structure against the sheet to which the reinforcing piece is attached, the box structure extending through the reinforcing piece to the opposite sheet.

4,285,531
REINFORCEMENT FOR COMPUTER PRINTOUT SHEETS
Ronald Balsamo, 131 Bogota Gardens, Bogota, N.J. 07603
Filed Apr. 16, 1979, Ser. No. 30,116
Int. Cl.³ B42D *19/00*
U.S. Cl. 281—5 **4 Claims**



1. An improved computer printout sheet comprising, in combination:

a continuous paper form having punched marginal portions and printout pages therebetween being adapted for handling by spoked ratchets of paper-advance mechanisms;

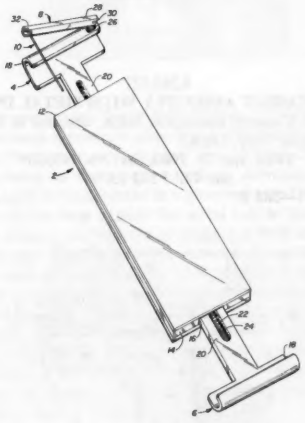
a binding strip having a flat web of reinforcing adhered thereto;

said binding strip with at least two spaced apertures therethrough dimensioned to accept successive spokes of said paper advance mechanism; and

a perforation along a line between said spaced apertures so that with said binding strip adhered to said continuous paper form, the perforation is adapted to coincide with the printout page edge,

whereby said binding strip is adapted to connect the punched marginal portion of two adjacent ones of said continuous paper forms.

4,285,532
BOOK MARKER
Charles S. Davis, 418 Laughton St., Antioch, Calif. 94509, assignor to Leonard Russo, San Rafael, Calif.
Filed Nov. 30, 1979, Ser. No. 99,149
Int. Cl.³ B42D *9/00*; A47B *97/04*
U.S. Cl. 281—42 **5 Claims**



1. A device for marking the user's place in a book and for holding the pages of the book down, said book having a bookcover, comprising:

a frame;

first and second cover engaging members attached to said frame, at least one of said members being movably attached to said frame;

said members having means for engaging the opposed edges of said book cover;

means for biasing said members towards each other whereby said book cover is captured between saidd engaging means;

an arm pivotably attached at one end to said first cover engaging member; and

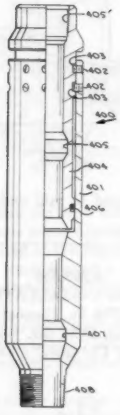
a page marker pivotally attached to said arm whereby when said device is secured to said bookcover, said page marker can be disposed in a first position extending over and in physical contact with at least one page of said book to cause said at least one page to be held between said page marker and said frame or a second position out of physical contact with said at least one page.

4,285,533

APPARATUS FOR CARRYING FIRST AND SECOND WEIGHT LOADS OF A TUBING STRING

Raphael J. Silberman, and Everett H. Smith, both of Houston, Tex., assignors to Baker International Corporation, Orange, Calif.

Filed May 7, 1979, Ser. No. 36,910
Int. Cl.³ E21B *17/06*
U.S. Cl. 285—2 **6 Claims**



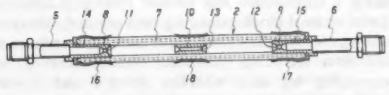
1. In an apparatus connectable on a tubing string extendible into a subterranean well, said apparatus being selectively separatable whereby said tubing string may be parted, the improvement comprising: first means selectively retrievable from said apparatus for carrying across said apparatus a first weight load defined through said tubing string below said apparatus; and second weight load carrying means for carrying across said apparatus a second weight load defined through said tubing string below said apparatus, said second weight load carrying means comprising a shear pin initially engaged through said apparatus and selectively shearable thereacross for carrying across said apparatus a second weight load defined through said tubing string below said apparatus, said second weight load being less than said first weight load, said second weight load carrying means being activatable to separate said apparatus and said tubing string when said second weight load is exceeded.

4,285,534

PULSATION-ABSORBING FLEXIBLE PIPE FOR PRESSURE FLUID DEVICE

Toshiyuki Katayama, Ako; Kiyokazu Agura, and Masayuki Matsuda, both of Himeji, all of Japan, assignors to Nichirin Rubber Industrial Co., Ltd., Hyogo, Japan

Filed Dec. 28, 1979, Ser. No. 107,916
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—119 **2 Claims**



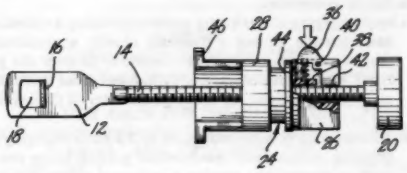
1. A pulsation-absorbing flexible pipe for a pressure fluid device, comprising a first connection metal fitting, having one end for connection to a discharge opening of a pressure fluid-feeding device, a second connection metal fitting, having one end for connection to a feed opening of a working device operated by the pressure fluid discharged from said pressure fluid-feeding device; a flexible pipe coupled to the other ends of said first connection metal fitting and said second connection metal fitting; first throttling means positioned at the other ends of said first connection metal fitting and said second connection metal fitting, said first throttling means having a bore of a diameter smaller than that of the connection metal fittings; and a second throttling means positioned inside of the bore of said flexible pipe, said second throttling means having a bore of a diameter smaller than that of the flexible pipe wherein said second throttling means prevents noise resulting from pulsating of fluid in said flexible pipe.

4,285,535

PORTABLE AUXILIARY DOOR LOCK

John E. Leary, Box 35, Woodville Herbert Rd., Bray, County Wicklow, Ireland

Filed May 14, 1979, Ser. No. 38,458
Int. Cl.³ E05C *19/18*
U.S. Cl. 292—293 **7 Claims**



1. A portable auxiliary locking device for securing an inwardly swinging door that is mounted in a frame, said locking device comprising:

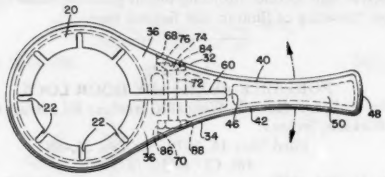
a threaded rod having a relatively thin plate region extending axially from one end thereof, said plate region including an angularly extending hook-like flange configured and arranged for engagement with a portion of said door frame; and

a body assembly coaxially received on said threaded rod and positionable therealong, said body assembly having a first face region configured for abutting solely with the inner surface of said door without abutting said frame when said hook-like flange is engaged with said frame and said door is in a closed position, said body assembly including a locking barrel and a body member each having a central bore for slidably receiving said threaded rod, said locking barrel including a recess having at least a portion thereof extending inwardly into said central bore, said first end face region of said body assembly being formed at a first end of said body member, said locking barrel being rotatably linked with the second end of said body member to permit rotation of said locking barrel relative to said threaded rod while said body member is stationary with respect to rotation about said threaded rod said body assembly further including quick-release means having a latch member mounted within said recess of said body member for maintaining said body assembly in threaded engagement with said threaded rod and allowing axial movement of said body assembly relative to said threaded rod through rotation of said locking barrel, said latch member having a plurality of teeth dimensioned and arranged for threaded engagement with said threaded rod, said teeth being the sole means for engaging said body assembly to said threaded rod, said quick-release means further including spring means for biasing said locking means in a position in which said teeth are threadedly engaged with said threaded rod, said locking means being manually depressible to operate said spring for disengaging said teeth from said threaded rod.

4,285,536
UNIVERSAL LEVER HANDLE ATTACHMENT FOR DOOR KNOB

French T. McCoy; Thomas A. Steinbrunner; Dale L. McEvers, and Loyal M. Overholser, all of Dayton, Ohio, assignors to TLM Industries, Inc., Dayton, Ohio

Filed Nov. 23, 1979, Ser. No. 96,882
Int. Cl.[3] E05C *13/00*
U.S. Cl. 292—336.3 5 Claims



1. A universal lever handle attachment for a door knob said attachment comprising,

a knob engaging and gripping portion including a cylindrical head portion having a diameter closely approximating that of the knob which it is adapted to fit over the grip, relief means formed in the cylindrical head portion to provide adjustability of effective diameter of the cylindrical head portion,

an intermediate portion connected to the knob engaging and gripping portion, said intermediate portion being configured to operatively receive a universal screw adjusting assembly, said universal screw adjusting assembly including an adjusting screw having a slotted head, said head being tapered downwardly from its outer periphery to the screw body extending therefrom, a washer fitting up against the underside of the screw head and having its contacting face correspondingly tapered with respect to the underside of the screw head, and a nut threadably engaging the end portion of the screw body,

the aforesaid relief means in the cylindrical head portion extending into the intermediate portion connected to the knob engaging and gripping portion, the intermediate portion being provided with opposed openings spanning the relief means in the intermediate portion whereby the universal screw adjusting assembly is mounted with the washer in one opening and the nut in the other,

and a handle portion extending from the intermediate portion, said handle portion being symmetrical so that it may be conveniently operated from the right or left side of the door knob.

4,285,537
SEALED CELL LIFT TOOL

Stan Hawrylo; Ed Neukirch, and William J. Eberle, all of Reading, Pa., assignors to General Battery Corporation, Reading, Pa.

Filed Sep. 14, 1979, Ser. No. 75,600
Int. Cl.[3] B66C *1/46*
U.S. Cl. 294—93 12 Claims

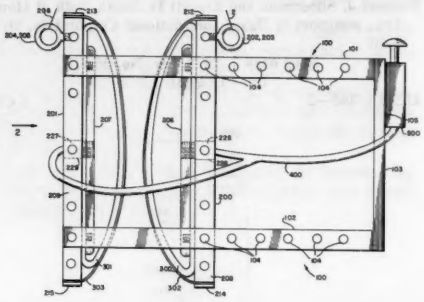
1. A lifting apparatus comprising:

(a) a framework;

(b) at least two endplates adjustably spaced from each other within said framework;

(c) at least two inflatable means opposing each other and connected to each of said endplates for inflating and holding an object between said endplates, wherein each inflatable means comprises a hose-like material open at each end and slit longitudinally from end to end;

(d) fluid supply means adapted to be connected to a fluid source and to said inflatable means for supplying and controlling a flow of fluid to said inflatable means, whereby supplying fluid to said inflatable means through said fluid supply means causes said inflatable means to inflate and expand toward each other; and

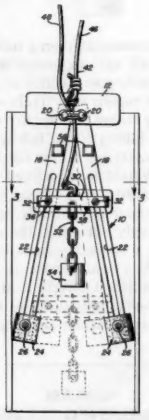


(e) lift means connected to said endplates for lifting said endplates thereby.

4,285,538
FLUE LINING INSTALLATION TOOL

Raymond J. Luke, 27 - 17th St., Cloquet, Minn. 55720

Filed Apr. 10, 1980, Ser. No. 138,906
Int. Cl.[3] B66C *1/44*
U.S. Cl. 294—97 4 Claims



1. A flue pipe installation tool including an upper head portion, a pair of slightly downwardly divergent elongated and substantially longitudinally straight legs each having its upper end pivotally supported from said head portion for oscillation about an axis extending transversely of said head portion and the legs for relative swinging movement of the lower ends of the legs toward and away from each other, said legs each including a longitudinal slot formed therein, a horizontally elongated control block extending between and interconnecting said legs intermediate their upper and lower ends, each end of said block including pin means slidably received in the corresponding leg slot, whereby upward and downward movement of said block along said legs causes the lower ends thereof to swing away and toward each other, respectively, said head and control block each including anchor means for anchoring one end of an elongated suspension member section thereto, the pivot axes of said legs relative to said head portion being spaced horizontally apart in parallel relation, the remote portions of the lower ends of said legs including resilient por-

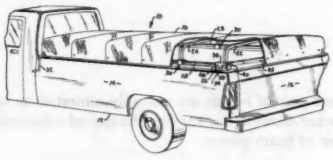
tions thereof for frictionally gripping the internal surfaces of a flue lining block.

4,285,539

RETRACTABLE TONNEAU TOP

Richard C. Cole, 627 E. 16th St., Sedalia, Mo. 65301

Filed Mar. 9, 1979, Ser. No. 18,949
Int. Cl.³ B60J *7/06*
U.S. Cl. 296—105 **4 Claims**



1. A retractable tonneau top for a vehicle bed having a pair of side walls, said tonneau top comprising:

a pair of tracks mounted to the respective side walls of the vehicle bed, each track having a substantially enclosed tube underlying a substantially enclosed guideway having an opening therein;

a plurality of sleeve members received in each guideway for movement lengthwise therein, said sleeve members being arranged in the opposed guideways in laterally aligned pairs;

a guide unit for each sleeve member, each guide unit having a guide portion substantially surrounding the guideway and a connecting portion extending through said opening from the guide portion and connected with the corresponding sleeve member, each guide portion having a pair of side plates embracing opposite sides of the guideway and a top plate covering the top of the guideway;

a plurality of bow members adapted to span the vehicle bed and each having opposite ends attached to the guide portions of the corresponding guide units;

a flexible cover carried by the bow members and having sufficient size to substantially cover the vehicle bed;

a pair of endless drive members supported for movement on the respective tracks and each having an upper run extending within the guideway of the corresponding track and a lower run extending within the tube of the corresponding track; and means for coupling the upper runs of the drive members with the rearmost pair of sleeve members to effect movement of the rearmost pair of sleeve members in unison with the upper runs of the drive members for extension and retraction of the flexible cover.

4,285,540

BODY STRUCTURE FOR AN AUTOMOBILE WITH CONCEALED WIPERS

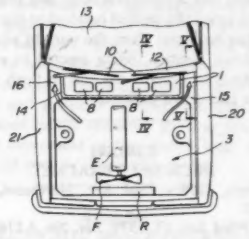
Hideo Harada, Yokosuka, and Eiji Imai, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 2, 1979, Ser. No. 62,997
Claims priority, application Japan, Aug. 24, 1978, 53/115122[U]
Int. Cl.³ B60J *1/02;* **B60S** *1/04*
U.S. Cl. 296—192 **4 Claims**

1. A body structure for an automobile, the automobile having an engine compartment, a cowl top upper panel adjacent the rear of the engine compartment, and wipers arranged on the cowl top upper panel, said structure comprising:

an engine hood covering the engine compartment, the cowl top upper panel and said wipers while in a closed position, the hood including an inner panel adjacent the cowl top upper panel, said cowl top upper panel including air intake holes therein concealed by the engine hood; and

a rubber seal carried on top of said cowl top upper panel and in contact along the length of the seal with the inner panel while the engine hood is in the closed position, said inner panel, said cowl top upper panel and said rubber seal forming air passages on sides of the seal opposite the air



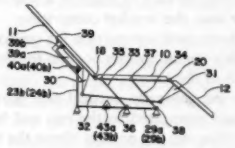
intake holes, said air passages extending from the rear of the engine compartment to the outside of the hood through which air in the engine compartment may communicate with the ambient atmosphere.

4,285,541

COMBINED CHAIR AND BED

Tetsuo Onishi, 37, Bizen, Iwade-cho, Naga-gun, Wakayama-ken, Japan

Filed Aug. 6, 1979, Ser. No. 63,989
Claims priority, application Japan, Aug. 12, 1978, 53/97794
Int. Cl.³ A47C *17/16, 13/00, 1/02*
U.S. Cl. 297—84 **7 Claims**



1. A combined chair and bed which comprises:

a frame assembly comprising a pair of generally U-shaped frame structures of identical construction, a plurality of beam members extending between the frame structures to keep said frame structures in spaced relation to each other and a wheel assembly on which said frame structures are mounted for movement from place to place;

a seat assembly including a back rest supported in position for pivotal movement between a generally upright position and a laid-down position, and a seat hingedly connected at one side edge to the back rest, said back rest when in the upright position forming a certain angle relative to the seat to assume a generally L-shaped configuration in cooperation with the seat, said back rest when in the laid-down position being level with the seat, said seat assembly being positioned between said frame structures; and

at least one link mechanism through which the seat assembly is mounted on the frame assembly, said link mechanism including means fixed relative to the frame assembly for providing a fulcrum about which the back rest pivots accompanied by the pivotal movement of the back rest relative to the seat, the hinge axis between the back rest and the seat moving angularly about the fulcrum during the pivotal movement of the back rest about said fulcrum, thereby shifting the seat relative to the frame assembly

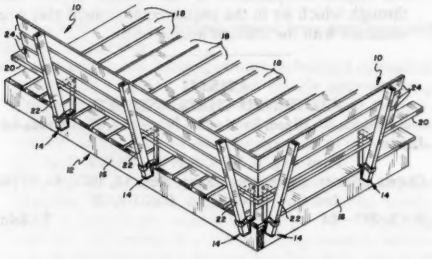
selectively upwardly and downwardly depending upon the direction of the pivotal movement of the back rest between the upright and laid-down positions, and link means pivotally supported for movement between generally inclined and upright positions, said link means, when said seat is upwardly shifted incident to the pivotal movement of the back rest from the upright position towards the laid-down position, being erected to assume the upright position to support the seat in flush with the back rest in the laid-down position.

4,285,542

DECK SEAT BRACKET

Ives L. Boisvert, 1200 - 72nd Ave. Northeast, Minneapolis, Minn. 55432

Filed Jan. 17, 1979, Ser. No. 4,174
Int. Cl.³ A47C *11/00*
U.S. Cl. 297—217 **8 Claims**



1. A bracket for connection to a base having a top surface and a vertical side surface to support a seat and a back joist adjacent to the seat, the bracket comprising:

a generally horizontal top portion for supporting the seat;

a generally horizontal bottom portion for connection to the top surface of the base;

first and second generally vertical side portions extending between and connected to the top and bottom portions and supporting the top portion above the bottom portion;

a loop connected to the first generally vertical side portion adjacent to the connection to the bottom portion for receiving the bank joist and holding the back joist in a generally upstanding position; and

a back joist support portion having a first downwardly extending portion below the bottom portion for connection with the vertical side surface of the base and a second outwardly turned portion, the second outwardly turned portion engaging and supporting a bottom end of the generally upstanding back joist.

4,285,543

ROCKER ATTACHMENT

Chester V. Clark, P.O. Box 644, Yarnell, Ariz. 85362

Filed Dec. 17, 1979, Ser. No. 103,994
Int. Cl.³ A47D *13/10*
U.S. Cl. 297—272 **9 Claims**

1. A rocker attachment for mounting on a folding lawn chair of the type having a pair of front legs integrally interconnected at the bottom ends by a first transverse bar and a second pair of legs integrally interconnected at the bottom ends by a second transverse bar, said rocker attachment comprising:

(a) a pair of rocker elements in spaced apart parallel relationship, each of said rocker elements formed of an elongated tubular member which is bowed along its length into an arcuate configuration;

(b) a spaced apart pair of beam means transversely interconnecting said pair of rocker elements for demountably receiving the first and second transverse bars of the folding lawn chair; and

(c) said pair of beams are movably mounted on said pair of rocker elements for varying the spaced relationship of said pair of beam means.

4,285,544

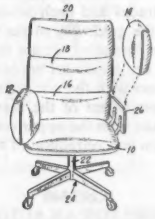
FURNITURE CONSTRUCTION

Otto W. Zapf, Eschborn, Fed. Rep. of Germany, assignor to Knoll International, Inc., Greenwich, Conn.

Continuation of Ser. No. 633,410, Nov. 19, 1975, abandoned, which is a continuation of Ser. No. 480,295, Jun. 17, 1974, abandoned, which is a continuation-in-part of Ser. No. 363,798, May 25, 1973, abandoned. This application May 12, 1977, Ser. No. 796,311

Claims priority, application Fed. Rep. of Germany, May 31, 1972, 7220445; Jun. 13, 1972, 7222086; Jul. 22, 1972, 7227236; Oct. 24, 1972, 7238927

Int. Cl.² A47C *1/12*
U.S. Cl. 297—440 **7 Claims**



1. Cushion construction comprising a resilient padding member in the general shape of a bag open at one of its ends and closed at its opposite end, upholstery material covering said padding member and also in the general shape of a bag open at one of its ends and closed at its opposite end and closed along its sides, said upholstery material enclosing said padding member with the open end of each adjacent each other, and the open end of said upholstery material extending inside the open end of said padding member, first attaching means along an inwardly exposed under surface of said upholstery material at the open end thereof, second attaching means along an inside surface of said padding member at and inside the open end thereof and removably attached to said first attaching means to provide an upholstered cushion in the general shape of a padded bag open at one of its ends and closed at its opposite end and closed along its sides and in which the upholstery material may be readily removed.

4,285,545
AUTOMOBILE PASSENGER SEAT WITH AN AUTOMATICALLY POSITIONED HEADREST

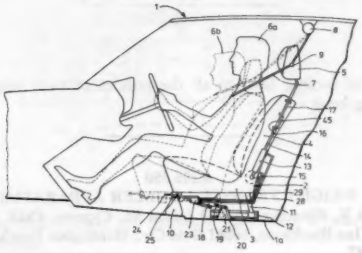
Dieter Protze, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,545

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2810577

Int. Cl.³ B60R *21/10*; A62B *35/00*

U.S. Cl. 297—483 **20 Claims**



1. In an automobile driver or passenger seat, said seat adjustable in the lengthwise direction of the vehicle and having a backrest, and a headrest supported on said backrest and vertically adjustable in relation thereto, the improvement comprising means for adjusting automatically the position of said headrest in response to lengthwise movement of said seat for moving said headrest upwardly away from said backrest when said seat is moved backward, and for moving said headrest downwardly when said seat is moved forward.

20. An automobile seat according to claim **1**, wherein said seat includes a safety belt means associated therewith, and said safety belt means are attached at one end to said seat on said headrest thereby to be adjustable in response to the longitudinal position of the seat.

4,285,546
TUNNEL PROFILE CONTROL

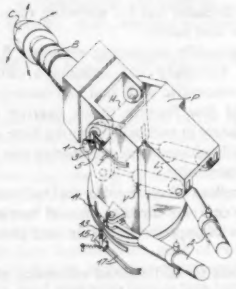
Michael Etherington, Retford, England, assignor to Dosco Overseas Engineering Ltd., Newark, England

Filed Jan. 8, 1980, Ser. No. 110,541

Claims priority, application United Kingdom, Jan. 17, 1979, 01667/79

Int. Cl.³ E21C *35/04*

U.S. Cl. 299—1 **9 Claims**



1. Apparatus for controlling the profile of an aperture cut by a cutting head capable of traversing movement in two directions at right angles to each other, comprising means to control the movement of the cutting head in said two directions, a template having an internal profile representing that of the aperture to be cut, a sensing device engageable with the profile of the template, following means responsive to movement of the cutting head to cause relative movement between the sensing device and template in a direction which is related to the direction of movement of the cutting head, said sensing device being engageable with the profile of the template when the cutting head has been traversed sufficiently in a particular direction so as to reach its desired profile extremity, and hydraulic sensing equipment which is actuated in response to said sensing device and template coming into engagement, said sensing equipment being effective to over-ride said means controlling the movement of the cutting head to ensure the head does not cut outside its desired profile.

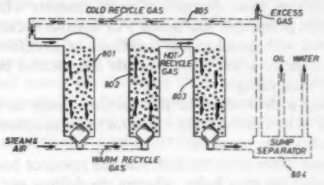
4,285,547
INTEGRATED IN SITU SHALE OIL AND MINERAL RECOVERY PROCESS

Bernard E. Weichman, Houston, Tex., assignor to Multi Mineral Corporation, Houston, Tex.

Filed Feb. 1, 1980, Ser. No. 117,570

Int. Cl.³ E21C *43/00*

U.S. Cl. 299—2 **11 Claims**



1. A method of in situ processing of oil shale ore comprising the steps of:

(a) establishing first, second, and third underground stopes, each stope being established by removing a portion of the oil shale ore from the stope, rubblizing the remaining ore in the stope, extracting the rubblized ore from the stope, crushing the ore to obtain a first fraction comprising substantially nahcolite particles and a second fraction comprising substantially oil shale particles, separating the substantially nahcolite particles from the substantially oil shale particles, and restoring at least a portion of the substantially oil shale particles to the stope by back filling the stope with said oil shale particles as the extraction, crushing, and separation are carried out to maintain the stope substantially filled with particles, wherein the first stope is a heating stope and having been subjected to retorting and carbon recovery, the second stope is a carbon recovery stope and having been subjected to retorting, and the third stope is a retort stope;

(b) injecting gas into the first stope and heating the gas by passing it through the first stope to recover sensible heat from the spent shale therein;

(c) transferring the heated gas from the first stope to the second stope and using the heated gas together with steam and a limited amount of air to obtain producer fuel gas by reaction with the carbon on the spent shale in the second stope;

(d) transferring the producer fuel gas to the third stope and using the producer fuel gas to retort the contents of the third stope to produce gaseous and liquid hydrocarbons and water;

(e) collecting the liquid and condensable hydrocarbon products produced by the retorting of the third stope; and

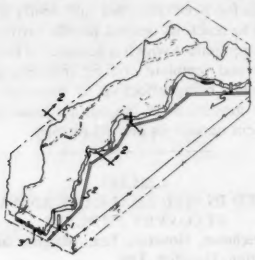
(f) transferring at least a portion of the noncondensable gaseous product of the retorting of the third stope to the first stope for heating to recover sensible heat from the spent shale in the first stope.

4,285,548

UNDERGROUND IN SITU LEACHING OF ORE

Jalmer W. Erickson, P.O. Box 3561, Casper, Wyo. 82602

Filed Nov. 13, 1979, Ser. No. 93,904
Int. Cl.³ E21B *43/28*; E21C *41/14*
U.S. Cl. 299—2 **20 Claims**



1. An underground in situ leaching process for the recovery of mineral values which are capable of being weakly soluble in aqueous solutions from deposits of such minerals which are located within permeable sedimentary or igneous rocks which are associated with geochemical interfaces or stratiform mineral accumulations when such deposits are located below a water table comprising:

establishing a drift close to the resource body in such a manner as to minimize any effect on the subsurface water and hydrostatic pressure;

drilling long holes from the drift into the resource body and perforating the long holes, wherein the drilling and perforating are done in such a manner as to minimize effects on the subsurface water and hydrostatic pressure;

injecting a recovery solution into the resource body through some of the long holes;

recovering the recovery solution the resource body through long holes which are not being used as injection long holes; and

conducting the injection and recovery of the recovery solution in such a manner as to maintain the hydrostatic pressure of the outer periphery of the resource body and to control the hydrostatic pressure of that portion of the resource body being leached in order to maximize the exposure of the resource body to the recovery solution thereby maximizing the recovery of the mineral from the resource body.

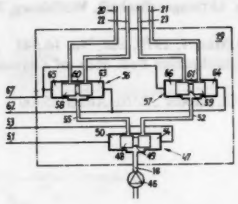
4,285,549

ASSEMBLY FOR COOLING THE TEETH OF THE CUTTING HEAD AND THE ROCK FACE

Alfred Zitz; Otto Schetina, and Herwig Wrulich, all of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Sep. 25, 1979, Ser. No. 78,835
Claims priority, application Austria, Oct. 10, 1978, 7278/78
Int. Cl.³ E21C *35/22*
U.S. Cl. 299—75 **15 Claims**

13. In a mining machine having a jib arm which carries a pair of rotary cutting heads positioned on opposite sides of the jib arm, each cutting head having a plurality of axially spaced-apart circumferential rows of cutting teeth: an assembly for cooling the cutting teeth comprising first and second sets of nozzles associated with each cutting head, the first set being disposed to direct cooling fluid on to the teeth of the respective cutting head and the second set being disposed to direct cooling fluid into the space between the rows of teeth of the respective cutting head, said first sets forming one group of nozzles and said second sets forming another group of nozzles; a water supply main; and valve means for selectively and independently controlling the flow of cooling fluid to each group of nozzles and for selectively and independently controlling the



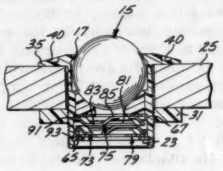
flow of cooling fluid to all the nozzles of each respective cutting head.

4,285,550

WEIGHT TRANSFER ROLLER APPARATUS

Robert V. Blackburn, 11542 Luzon St., Cypress, Calif. 90630, and Ian Blackburn, 16081 Gold Cir., Huntington Beach, Calif. 92647

Filed Oct. 15, 1979, Ser. No. 84,996
Int. Cl.³ F16C *29/04*
U.S. Cl. 308—6 R **16 Claims**



1. Weight transfer roller apparatus for mounting on a platform defined by a wall having a through wall bore formed therein and comprising:

a housing including an elongated barrel formed to be received telescopically in said bore and further formed with a ball-receiving bore and having oppositely disposed first and second extremities, said first extremity being formed with an annular radially outwardly flared flange for overlying the marginal edges of one end of said wall bore and said barrel being further formed with exterior threads;

an interior threaded nut for screwing onto said second extremity of said barrel;

a radially inwardly projecting retaining flange formed on said first extremity and defining a circular protrusion opening concentric with said ball-receiving bore;

a cylindrical low friction thrust bearing means disposed intermediately in said ball-receiving bore and formed with a spherically-shaped concave bearing seat opening toward said one extremity;

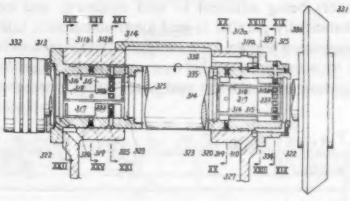
a spherical roller ball received in said ball-receiving bore and nested on one side directly on said bearing seat and projecting on its opposite side from said protrusion opening; and,

retainer means in said second extremity of said bore and engaging said barrel to hold said roller ball captive between said retaining flange and bearing means whereby said housing can be affixed to said platform with said one side of said roller ball projecting from said protrusion opening and when a weight is applied to said ball it will be substantially uniformly supported by such spherically-shaped concave bearing seat.

4,285,551
FLUID BEARING

Hiroshi Suzuki, Okazaki; Kunio Shibata, Kariya, and Kazuhiko Sugita, Anjo, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi, Japan

Filed Jun. 28, 1979, Ser. No. 53,038
Claims priority, application Japan, Jul. 3, 1978, 53/80696; Jul. 3, 1978, 53/80697; Jul. 24, 1978, 53/90098; Aug. 2, 1978, 53/94427; Dec. 27, 1978, 53/161527; Dec. 27, 1978, 53/161528
Int. Cl.³ F16C *32/06*
U.S. Cl. 308—9 14 Claims



1. A fluid bearing for rotatably supporting a rotary shaft comprising:

a stationary housing;

a bearing member fixedly inserted in said stationary housing and having an internal bore which forms a bearing surface;

a plurality of pressure generating zones defined on said bearing surface in a circumferential direction;

a pair of axially spaced fluid pockets in each of said pressure generating zones;

a land portion defined on said bearing surface between said pair of axially spaced fluid pockets in each of said pressure generating zones;

at least one raised land formed in at least one of said pair of fluid pockets;

an axial passage for fluidically communicating said pair of fluid pockets with each other;

throttle means connected to said fluid pockets for admitting pressurized fluid in the same;

an exhaust port formed on said at least one raised land and communicating with atmosphere for discharging pressurized fluid; and

exhaust means formed on said bearing surface outside said pressure generating zones and communicating with the atmosphere for discharging pressurized fluid.

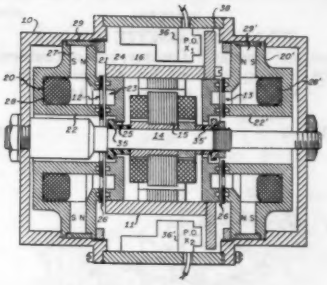
4,285,552
TORQUER APPARATUS FOR MAGNETICALLY SUSPENDED MEMBERS

Clair G. Sutter, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,202
Int. Cl.³ F16C *39/06*
U.S. Cl. 308—10 5 Claims

1. In a magnetic suspension system of the type including a fixed member and a movable member adapted to be suspended relative to said fixed member with three degrees of rectilinear freedom and three degrees of angular freedom, at least one of said members having a plurality of spaced magnetically permeable pole pieces and the other thereof having cooperable magnetically permeable pole faces defining a plurality of magnetically permeable gaps therebetween, each of said spaced plurality of pole pieces further including permanent magnet means for producing a fixed magnetic field across said gaps and variably energized coil means associated with said permanent magnet means for modulating said permanent magnet flux field in said gaps for suspending said movable member relative to said fixed member in a predetermined rectilinear positional relationship in the direction of said flux field, and means responsive to said flux field for normally maintaining said movable member relative to said fixed member in a predetermined rectilinear positional relationship normal to the direction of said flux field, the improvement for applying an electronically generated force on said movable member for controlling the angular positional relationship between said fixed and movable members comprising:

electric coil means mounted on at least one of said pole



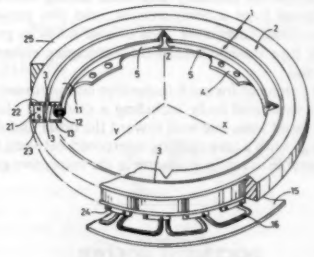
pieces and within its associated gap and having the conductors thereof oriented at right angles to said magnetic flux field in said gap, and

control means for supplying an electric current through said coil means for changing the direction of said modulated magnetic flux field across said gap whereby to induce a force on said movable member normal to said flux field proportional to said current.

4,285,553
MAGNETIC SUSPENSION MOMENTUM DEVICE

Alan A. Robinson, Wassenaar, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, France

Filed May 2, 1979, Ser. No. 35,409
Claims priority, application Belgium, May 22, 1978, 187909; Mar. 27, 1979, 194243
Int. Cl.³ F16C *39/06*
U.S. Cl. 308—10 6 Claims



1. A magnetic suspension momentum device comprising an annular stator member and an outer annular rotor member coaxial with the stator member, said rotor member surrounding the stator member without mechanical contact with the latter and with an annular gap therebetween;

said rotor member comprising a pair of parallel radial annular pole pieces, an axial ring-like permanent magnet therebetween with said permanent magnet being polarized axially, an outer ring of a non-magnetic material fixed on the periphery of said rotor member, said outer ring being surrounded by a second ring of a magnetic material,

said stator member comprising a ring-like U-shaped section of a magnetic material with an axial ring portion and a pair

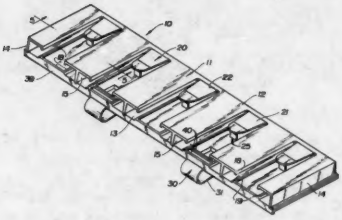
of parallel radial annular portions extending outwardly respectively in the same planes as the annular pole pieces of the rotor member with radial annular gaps therebetween, said axial ring portion including segmental coils for producing, when traversed by an electric current, magnetic fluxes across said radial annular gaps to circulate circumferentially along the annular pole pieces of the rotor member.

4,285,554

SUNVISOR CASSETTE HOLDER

Ted A. Bell, and Timothy S. Cooksey, both of Coshocton, Ohio, assignors to Pretty Products, Inc., Coshocton, Ohio

Filed Apr. 14, 1980, Ser. No. 140,189
Int. Cl.[3] A47B *81/06;* B60R *7/00*
U.S. Cl. 312—9 **25 Claims**



1. A storage holder for tape cassettes comprising

a structural body including a pair of sidewalls supported in relatively spaced relationship and defining a plurality of tape-cassette-receiving compartments disposed in side-by-side relationship and an opening for each compartment formed along a longitudinal side of the structural body for passage of tape cassettes into and out of each respective compartment, said side walls provided with a plurality of elongated cassette support ribs extending longitudinally through each of said compartments in substantially perpendicular relationship to the opening thereto with the ribs on opposed walls of each compartment cooperatively defining a space therebetween substantially equal to the thickness of a tape cassette and between which a tape cassette can be slideably displaced during insertion ans withdrawal from a compartment, said ribs projecting a distance from respective ones of said walls to prevent a cassette tape transport head from engaging either of said walls, and

a retaining element for each respective compartment carried by said structural body including a clamping plate resiliently biased from one wall toward the other and disposed to engage with a tape cassette interposed between said ribs and operable to retain a cassette in the respective compartment.

4,285,555

DOCUMENT HOLDER

Norman A. Hedstrom; Robert G. Bogren, both of Worcester, and David M. Wright, Shrewsbury, all of Mass., assignors to Wright Line Inc., Worcester, Mass.

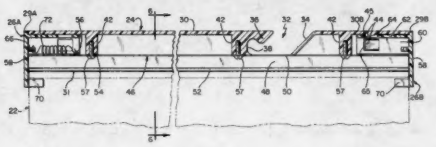
Filed Dec. 10, 1979, Ser. No. 102,150
Int. Cl.[3] A47B *65/00;* B42F *3/00*
U.S. Cl. 312—184 **11 Claims**

1. A device for filing bound items such as books, loose leaf notebooks, and the like, said bound items being characterized by having a binding with a spine terminating in head and tail edge portions, said device comprising in combination:

an elongate member having a longitudinal axis and longitudinally terminating in a first open end and a second open end spaced apart a distance substantially equal to that separating said edge portions, said member also having a back extending between said ends and a structure parallel to and remote from said back which is dimensioned to fit said spine;

a first end piece and a second end piece extending respectively into said first and second open ends, at least said first end piece being capable of limited longitudinal motion within said elongate member so as to be movable relative to said second end piece between a first position and a second position;

first and second elongate fingers attached to said first and second end pieces respectively, and disposed so that they extend toward said second and first ends respectively, said fingers being adjacent to said structure, and extending substantially parallel to said longitudinal axis, said fingers being more remote from said back than is said structure so as to accommodate between said first finger and said structure and between said second finger and said struc-



ture the said head and tail edge portions respectively of said binding; said first position being characterized by said first and second fingers being disposed nearer to one another than said head and tail edge portions are from one another and said second position being characterized by said first finger and second finger being disposed further from another than said head and tail edge portions are from one another;

defeatable restraining means for maintaining said first and second end pieces in said first position; and

at least one hook means situated on said back of said member remote from said first and second ends;

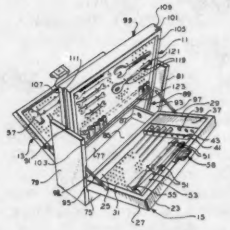
whereby one of said bound items may be detachably affixed to said elongate member by the cooperative action of said first and second finger and said elongate member may be attached to a filing system by said hook means.

4,285,556

TOOL CHEST

Emil Loeffel, 141 Centre St., Waldwick, N.J. 07463

Filed Feb. 25, 1980, Ser. No. 124,549
Int. Cl.[3] A47B *51/00, 81/00;* B65D *85/28*
U.S. Cl. 312—244 **12 Claims**



1. A chest for the storage of tools and the like comprising:

(a) a main support housing;

(b) a center member slideably mounted in said main support housing in a vertical direction when said chest is upright, said center member unattachably mounted in said housing, whereby said center member can be removed from said housing, said center member including a vertically dis-

posed board member and means disposed thereon for supporting tools and the like; and

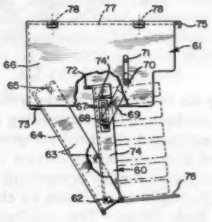
(c) at least one side member pivotally mounted to said main support housing, said side member including a board member and means disposed thereon for supporting tools and the like, said board member orientated in a vertical position when said side member is pivoted to form a closed chest, and said board member orientated in a position between vertical and horizontal when said side member is pivoted to an open position.

4,285,557

STORAGE TRAY FOR PACKAGED ARTICLES

Angelo Paladino, Brooklyn, and Arnold Campolo, Jr., Staten Island, both of N.Y., assignors to Palco Industries, Inc., Brooklyn, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,839
Int. Cl.³ A47B *67/02, 43/00;* B65D *85/672*
U.S. Cl. 312—246 **2 Claims**



1. A storage tray assembly for packaged articles including a movable tray where said tray has a plurality of spaced parallel upstanding panels extending across a portion of the tray, a housing for said tray including side walls and a bottom portion pivotally connected at one end to a side wall and pivotally connected at its opposite end to an end of said tray, and a crank arm having one end pivotally connected to a side wall and an opposite end pivotally connected to a side of said tray whereby when said bottom portion is moved about its pivotal connection with said side walls, the ends of said crank arm will pivot with respect to said side walls and to said tray to cause said tray to move about its pivotal connection with said bottom portion from a horizontal position to a substantially vertical position.

4,285,558

CASSETTE HOLDER

Miles E. Medford, 1642 Union St., Brooklyn, N.Y. 11213

Filed Feb. 27, 1980, Ser. No. 125,110
Int. Cl.³ A47F *7/00, 3/06;* A47B *81/00*
U.S. Cl. 312—278 **2 Claims**

1. A cabinet specifically for storing and displaying a plurality of tape cassettes, the cabinet comprising:

a pair of side panels each having bottom and rear edges which are substantially normal with respect to one another, a top edge parallel with and shorter than the bottom edge and a front edge having a portion parallel with the rear edge and an oblique portion extending at an oblique angle to the other edges from the lower portion of the front edge to the top edge;

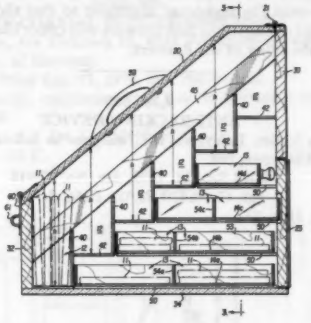
a front panel extending between the front edges;

a back panel extending between the rear edges at upper portions thereof;

a rigid, transparent cover hinged to the top edge of the back panel, said cover having one section which is parallel to the top edges and another section oblique to said one section which is parallel to the oblique edges when the cover is closed;

locking means on the oblique section and front panel for locking the cover to the front panel upon closing the cover;

a plurality of front compartments disposed between the panels and stepped vertically with respect to one another and said compartments separated horizontally by vertical dividers, each front compartment including a horizontal shelf and vertical wall whereby the front compartments each contain a plurality of tape casettes resting on end therein;



a plurality of draw runners on the side panels and located at the same heights as some of the horizontal shelves of the front compartments;

a plurality of drawers slidable on the runners and each having a height less than the vertical distance between the shelves so as to fit under the shelves, at least some of said drawers including vertical partitions for subdividing the drawers into compartments for holding tape cassettes, and said drawers being accessable below the back panel, and

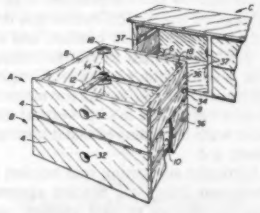
door means beneath the back panel for shutting behind the drawers when the drawers are shut.

4,285,559

COMBINING DRAWERS

George B. Koch, 711 Meadowsweet #109, Corte Madera, Calif. 94925

Filed Dec. 10, 1979, Ser. No. 102,206
Int. Cl.³ A47B *47/00*
U.S. Cl. 312—298 **10 Claims**



1. At least a pair of first drawers adapted to be held by a support structure in vertically registered, adjoining relation and to be joined together to effectively form a second drawer having a holding capacity substantially equal to the sum of the holding capacities of the first drawers, each of said first drawers being slidably mounted in said support structure for individual movement when not joined together and united movement when joined together, each of said first drawers comprising:

a generally rectangular sidewall structure including a front panel, a back panel and a pair of side panels, said front,

back and side panels having substantially identical transverse dimensions;

a bottom panel configured and dimensioned to be situated to extend between opposing surfaces of the sidewall structure with the front, back and side panels extending vertically upward from the bottom panel when the drawer is held by the support structure, at least the upper one of the first drawers including means for allowing the bottom panel to be removable; and

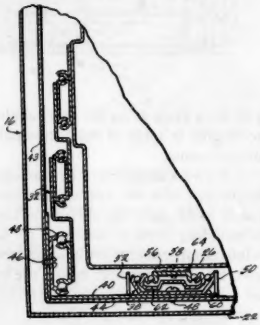
means for releasably joining said first drawers to one another in vertically registered alignment so that slidable movement of one of the first drawers will effect like movement in the other of the drawers.

4,285,560

ANTI-RACKING DEVICE

Norman Miller, Lafayette, Ind., assignor to Schwab Safe Co., Inc., Lafayette, Ind.

Filed Sep. 24, 1979, Ser. No. 77,918
Int. Cl.³ A47B *88/00*; F16C *21/00*
U.S. Cl. 312—331 **6 Claims**



1. A slide assembly for slidably mounting a drawer having two vertical sides and a horizontal base in a cabinet having side walls and a base support comprising:

an L-shaped bracket having an inner end, a horizontal planar portion and a vertical planar portion joined to said horizontal planar portion along a longitudinal edge;

a first elongated slide mounted to the horizontal portion of said bracket parallel said longitudinal edge;

a second elongated slide mounted to said vertical portion of said bracket parallel said longitudinal edge, said first and second elongated slides each including a first slide member fixedly mounted to said bracket, and a second slide member slidably mounted to said first slide member for movement in a direction parallel said longitudinal edge;

a third elongated slide and means for mounting said third slide between one of said drawer vertical sides and one of said cabinet walls for sliding of said drawer into and out of said cabinet; and

means for vertically supporting said bracket in relation to said cabinet and fixing said bracket against longitudinal movement in relation to said cabinet, such that said bracket vertical portion is disposed between the other of said two drawer vertical sides and the other cabinet side wall adjacent said other of said two drawer vertical sides, and said bracket horizontal portion is disposed between said drawer horizontal base and said cabinet base support with said bracket inner end disposed at the inner end of said cabinet;

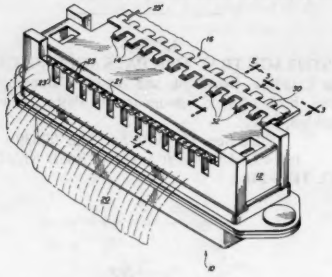
said bracket longitudinal edge being parallel aligned such that said drawer may be slid into and out of said cabinet on said first, second and third slides, said first slide acting to prevent racking when said drawer is slid in and out of said cabinet.

4,285,561

TRANSMISSION CABLE MASS TERMINATION

Weichien Chow, Park Forest, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 871,908, Jan. 24, 1978, abandoned. This application Jul. 6, 1979, Ser. No. 55,921
Int. Cl.³ H01R *9/07, 11/20*
U.S. Cl. 339—14 R **11 Claims**



1. An assembly for terminating an electrical cable having a plurality of first conductors for transmitting electrical signals or power to an associated electrical component and ground conductors, all of said conductors carried in a flat strip of insulative material, said assembly comprising:

a connector including terminal means for electrically engaging one or more of said first conductors, and active contact means in electrical communication with said terminal means for electrical connection to said associated component;

means associated with said cable outside said connector for isolating said connector from the ground conductors of said cable; and

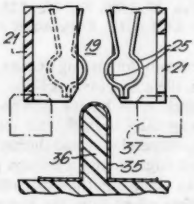
means for bridging said isolation means to electrically join at least one of said ground conductors to a ground terminal within said connector.

4,285,562

DUAL PURPOSE ELECTRICAL CONNECTOR

Vladimiro Teagno, and Franco Trevisiol, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 853,922, Nov. 22, 1977, abandoned. This application Jun. 7, 1979, Ser. No. 46,873
Int. Cl.³ H01R *27/00*
U.S. Cl. 339—33 **4 Claims**



1. A stamped and formed electrical terminal which is intended to be inserted into an insulating housing, said terminal being mateable with a terminal tab and being alternatively mateable with a conductor on a circuit board, said terminal comprising:

a channel-shaped body portion having a mating end and a rearward end, said body portion having a web and sidewalls, wire connecting means extending from said body portion at said rearward end,

inwardly directed flanges extending from each of said sidewalls at said rearward end, first spring arms extending from each of said flanges to said mating end, said spring arms being inclined towards said web and being between said sidewalls, said spring arms having parallel adjacent side edges,

a second spring arm struck from said web adjacent to said rearward end, said second spring arm being initially inclined outwardly from said web, said reversely curved intermediate its ends, and having a free end portion which is inclined towards said web whereby,

said terminal is mateable with a flat terminal tab by relative movement of said tab between said first spring arms, and said second spring arm, and said terminal can be mated with a circuit board conductor by contacting the external surface of said second arm at the reversely curved portion with said circuit board conductor.

4,285,563

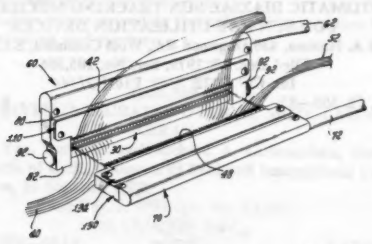
CABLE CONNECTOR AND CAP SHOES THEREFOR

Claire G. Crosier, San Marcos, and Charles W. Waas, Huntington Beach, both of Calif., assignors to Communications Technology Corporation, Los Angeles, Calif.

Filed Jul. 26, 1979, Ser. No. 60,997

Int. Cl.³ H01R *13/635*

U.S. Cl. 339—45 M **7 Claims**



1. In a cap shoe for making electrical connections between a plurality of conductors in a first cable and a corresponding plurality of conductors in a connector module of an elongate strip connector which includes an index strip, the connector module, and a cap, the cap having access holes leading to the respective conductors in the connector module, the connector module including means for terminating the ends of conductors of a second cable, the combination of:

a cap shoe body of a size and shape to accommodate the connector and having an elongate central section with first and second arms projecting from opposite ends of said central section forming a first U shaped receptacle for the connector, with an inwardly projecting guide ridge on each of said arms for sliding engagement with the connector;

releasable means for securing said cap shoe body to the connector;

a plurality of spring loaded contact pins carried in a line along said central section of said cap shoe body and insertable through the respective access holes in the cap into electrical contact with the respective conductors in the connector module, each of said pins including means for terminating the end of a conductor of the first cable, with said cap shoe body including means for receiving the first cable;

a second U shaped slide member mounted on said cap shoe body with the arms of said slide member embracing said body and slidable relative thereto between extended and retracted positions in a direction parallel to the axes of said contact pins, and including an elongate spacer between the arms of said slide member with openings in a line through which said contact pins extend; and

compression spring means positioned within said cap shoe body and engaging said body and slide member urging said slide member away from said body for ejecting the connector from said body;

whereby said extending contact pins enter the access holes in the cap into electrical contact with the respective conductors in the connector module upon retraction of said slide member by sliding said cap shoe body onto the connector and compressing said spring means.

4,285,564

HF COAXIAL PLUG CONNECTOR

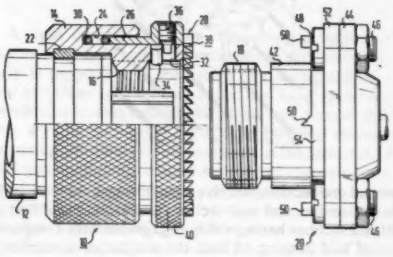
Georg Spinner, Am Eichberg 12, 8152 Feldkirchen-Westerham 1, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,062

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 2840728

Int. Cl.³ H01R *13/639*

U.S. Cl. 339—89 C **13 Claims**



1. HF coaxial plug connector having a pin plug connector and a jack connector, one of which has a cap nut and the other an external thread onto which said cap nut can be screwed in the connected condition, and having an anti-turning device for said cap nut which comprises two toothed rings with rigid sawtooth toothing formed thereon, which rings can be brought into locking engagement with each other, said toothing of each said ring pointing toward the other said ring when said connectors are in the connected condition, and which rings are arranged on said cap nut and on said other connector, respectively in such manner as to be fixed against turning in either the locking or the unlocking direction when in the connected condition, one of said toothed rings being arranged on said cap nut and the other said toothed ring being fastened to said other connector, said one toothed ring being disengagable from said other toothed ring axially against a spring force, characterized by the fact that a cap ring is connected with said cap nut for causing said cap nut to rotate and that the other said toothed ring comprises teeth seated on a ring which is fastened to the opposing said connector; said other toothed ring being developed as an individual structural part adapted to be secured to conventional plug connectors.

4,285,565

ELECTRICAL CONNECTOR

Edward Kirby, Mt. Prospect, Ill., assignor to TRW Inc., Cleveland, Ohio

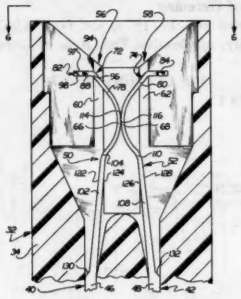
Filed Nov. 19, 1979, Ser. No. 95,227

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—176 MP **9 Claims**

1. A connector for making electrical contact with a printed circuit board or the like comprising a housing formed of an electrical insulating material, said housing including first and second spaced wall sections defining an area into which a portion of the circuit board is inserted, said first wall section defining a first slot, said second wall section defining a second slot which extends parallel to and is disposed directly across

from said first slot, first and second contact members having mounting sections held by said housing, terminal sections projecting out of said housing and movable cantilevered spring sections disposed within said housing, said cantilevered spring sections including contact surface means disposed in the space between said first and second wall sections and disposed in abutting engagement with each other for completing an electrical connection therebetween and movable from abutting engagement with each other by insertion of a portion of a circuit board between said contact surface means to complete an electrical connection with the portion of the circuit board, said first and second contact means including respective first



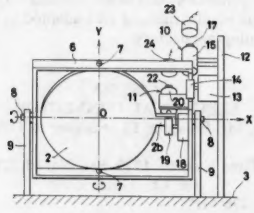
and second end sections which extend through respective slots in said first and second wall sections and each of said first and second end sections having a stop engageable with a respective portion of said housing to limit the amount of movement of said first and second contacts into said area, the stops on each of said first and second end sections having a normal position spaced from engagement with its respective portion of said housing when said cantilevered spring sections are disposed in abutting engagement with each other and each of said stops being movable from its normal position into engagement with its respective portion of said housing in response to an amount of movement of its associated contact member toward the wall section associated with the other contact member.

4,285,566

OPTICAL SCANNING APPARATUS

Shigeyuki Yamamoto, Kure, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Feb. 8, 1980, Ser. No. 119,783
Claims priority, application Japan, Mar. 30, 1979, 54/38849
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.6 **2 Claims**



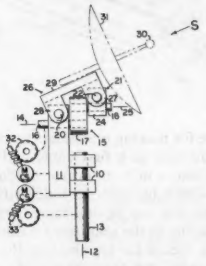
1. An optical scanning apparatus for providing planar scanning of a test specimen in a waveform locus with a beam, which comprises a reflector provided with a pair of support shafts parallel to the surface of the reflector and adapted to reflect the beam and throw it upon the test specimen; a frame rotatably supporting thereon the support shafts of the reflector and provided with stationary shafts rotatably fixed perpendicularly to the support shafts of the reflector; a heart cam possessing a contour of the shape of a symmetrical Archimedes' spiral with respect to a specific line and held in direct contact in one direction with the portion of the reflector angularly displaced by one normal angle from the direction of the support shafts of the reflector; a retention pin opposed to the heart cam held in contact with the reflector and serving to energize the reflector in the other direction; a motor means serving to rotate in one fixed direction the heart cam held in contact with the reflector and causing the reflector to be oscillated around the support shafts thereof; another heart cam possessing a contour of the shape of a symmetrical Archimedes' spiral with respect to a specific line and held in direct contact in one direction with the portion of the frame angularly displaced by one normal angle from the direction of the stationary shafts of the frame; another retention pin opposed to the heart cam held in contact with the frame and serving to energize the frame in the other direction; and a motor means serving to rotate in one fixed direction the heart cam held in contact with the frame and causing the frame to be oscillated around the stationary shafts of the frame, whereby the two heart cams are simultaneously rotated by the two motor means to have the beam provide scanning of speed linearity on the surface of the test specimen.

4,285,567

AUTOMATIC BIAXIAL SUN TRACKING MECHANISM FOR SUN RAY UTILIZATION DEVICES

Paul A. Hansen, 435 Dogwood Rd., West Columbia, S.C. 29169

Filed Dec. 19, 1979, Ser. No. 105,386
Int. Cl.³ G02B *7/18*; F16H *21/44*
U.S. Cl. 350—83 **9 Claims**



1. An automatic biaxial sun tracking mechanism for sun ray utilization devices comprising means for continuously orienting said devices relative to the sun, said means including a mount structure for supporting and positioning said sun ray utilization devices, a polar shaft, a declination crankshaft, and suitable connecting members:

A. said suitable connecting members providing connection between said mount structure, said polar shaft, and said declination crankshaft and arranged to maintain a mutually perpendicular relationship of (1) the longitudinal axis (daily axis) of said polar shaft, (2) the longitudinal axis (main journal axis) of said declination crankshaft, and (3) the longitudinal axis (seasonal axis) of a pivoting means for said mount structure;

B. said polar shaft having its daily axis oriented parallel to the earth's axis of rotation and having means to rotate said suitable connecting members with attached parts about said daily axis;

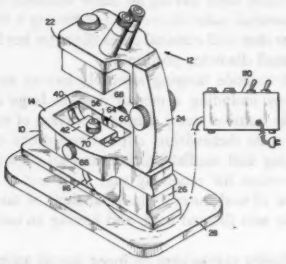
C. said declination crankshaft having rotary motion effecting alternating pivotal movement of said mount structure about said seasonal axis by means of a crankpin having a suitable linkage with said mount structure, and said declination crankshaft having means for rotation about its main journal axis.

4,285,568

MICROSCOPE STAGE

Alan Elgart, R.D. 4, P.O. Box 70B, Beakes Rd., New Windsor, N.Y. 12550

Filed Aug. 13, 1979, Ser. No. 65,890
Int. Cl.[3] G02B 21/24
U.S. Cl. 350—90 14 Claims



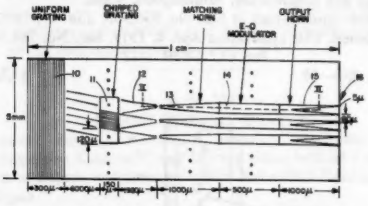
1. A stage for a microscope comprising:
body means having an aperture therein for supporting an article to be viewed,
vacuum means extending through said body means for holding the article on said aperture and,
illumination means extending through said body means for illuminating said aperture.

4,285,569

CCD DRIVEN INTEGRATED OPTICAL MODULATOR ARRAY

Shi-Kay Yao, Anaheim, and Richard A. Gudmundsen, Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 3, 1979, Ser. No. 81,419
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.14 5 Claims



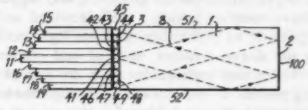
1. An optical array comprising:
a substrate having a major surface;
a plurality of individual optical waveguides capable of propagating light, the waveguides being formed from a material which modulates the propagating light in response to an electric field and being implemented on a major surface of said substrate;
a uniform grating which functions to convert an incident optical beam into a guided optical beam into a guided optical wave traveling in said optical waveguides along said major surface of said substrate;
a chirped grating spaced from said uniform grating for focusing said guided optical wave into said waveguides;
means for modulating the propagating light in each of the individual waveguides, comprising a first and a second spaced apart electrode disposed on the surface of said substrate for creating an electric field in each of said waveguides;
a body of semiconductor material disposed adjacent said substrate; and
circuit means implemented on said body of semiconductor material for providing said predetermined quantities of electric charge to said means for modulating.

4,285,570

LIGHT BRANCHING DEVICE

Kouichi Minemura, and Teiji Uchida, both of Tokyo, Japan, assignors to Nippon Electric Company, Ltd., Tokyo, Japan

Filed Oct. 10, 1978, Ser. No. 949,745
Claims priority, application Japan, Oct. 14, 1977, 52-123716; Oct. 14, 1977, 52-123717; Aug. 17, 1978, 53-113002[U]; Aug. 30, 1978, 53-119339[U]
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.18 9 Claims



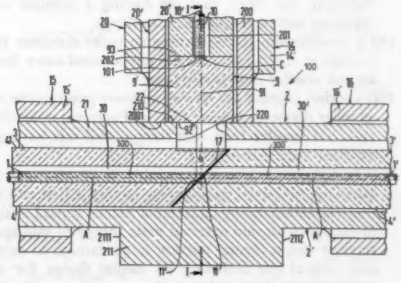
1. A light branching device comprising a light focusing transmission body having a refractive index decreasing approximately in proportion to the square of the distance from the optical axis plane and first and second end faces approximately perpendicular to said optical axis plane, said second end face having a reflective means, said light focusing transmission body having a physical length measured in the direction of said optical axis equal to an integral multiple of approximately $\frac{1}{4}$ of the pitch and a substantial light path length equal to an integral multiple of approximately $\frac{1}{4}$ of the pitch at which the light propagates, a plurality of optical fibers, one end of each of said optical fibers lying adjacent to said first end face of said light focusing transmission body and focusing means disposed between the ends of at least a proportionate number of said optical fibers and said light focusing transmission body, said focusing means having its center axis in a direction perpendicular to said optical axis plane and having a curved surface parallel to its center axis, whereby the light beam from a selected one of said optical fibers is respectively coupled to at least one other of said optical fibers.

4,285,571

BRANCHING DEVICE

Gerhard Winzer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 20, 1979, Ser. No. 68,051
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842535
Int. Cl.[3] G02B 5/14
U.S. Cl. 350—96.18 28 Claims



1. A branching device for branching a light component out of an optical waveguide, said device comprising first, second

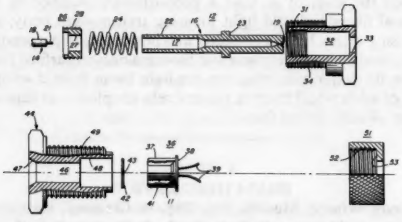
and third optical waveguides; means for positioning the first and second optical waveguides as a pair of waveguides with the axis of the first and second waveguides being on a common waveguide axis and a gap between the end surfaces thereof; a beam divider means being disposed in the gap and including a layer extending obliquely to the common waveguide axis for reflecting out a portion of the light transmitted by one of said pair of waveguides as a light component; focusing means including a focusing lens being positioned to receive said light component and focusing the light component in real terms at a point; and means for supporting the third optical waveguide with an end surface arranged at said point, said means for positioning including a carrier for supporting said first and second waveguide, said carrier including a support member and a pair of cylindrical carrier members, said support member being a sleeve member having a wall provided with an aperture at a position to enable the reflected light component to pass from the sleeve member, each of said carrier members receiving one of said waveguides with the axis of the waveguide being parallel to the axis of the carrier member, each of said carrier members consisting of a transparent material at least at the end adjacent to the end surface of the waveguide, and said sleeve member receiving said cylindrical carrier member with their axes aligned.

4,285,572

OPTICAL CABLE CONNECTOR FOR CONNECTING AN OPTICAL FIBER WITH A PHOTODIODE

Richard A. Beaudette, Tewksbury, and John A. Gonsalves, Woburn, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 27, 1980, Ser. No. 134,366
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.20 **2 Claims**



1. An optical cable connector comprising:

(a) a fiber connector plug adapted to receive an optical fiber assembly including sheath and fiber, including

(i) a generally cylindrical optical pin having an axial passageway including a large diameter portion for receiving said fiber assembly, and a small diameter portion for receiving said fiber, said pin having a nominal outer diameter with a medial circular flange,

(ii) a compression spring having an inner diameter large enough to receive said optical pin nominal outer diameter but smaller than said flange;

(iii) a spring retainer nut having an inner passageway with an inner diameter greater than said nominal outer diameter, but smaller than said flange, said nut having an external male thread; and

(iv) an optical pin housing assembly having an axial passageway, said axial passageway having a first end portion characterized by an internal female thread adapted to engage with said external male thread of said spring retainer nut, a medial portion large enough to receive said optical pin including its medial flange for axial reciprocation therewithin, and an opposing end portion having a diameter barely larger than said nominal outer diameter but smaller than said medial circular flange; and

(b) a mating connector receptacle including

(i) a housing including an outer cylindrical shell, a flanged base, a photodiode chip affixed to said base, electrical leads extending through said base to said chip, and a transparent light pipe affixed to said chip and extending axially with said shell, said light pipe having a diameter substantially larger than the diameter of said fiber;

(ii) a circular shim having an outer diameter larger than said nominal outer diameter, and having a central hole smaller than said nominal outer diameter but larger than said small diameter portion;

(iii) a photodiode housing assembly having an axial passageway including a medial portion large enough so that the nominal outer diameter portion of said pin can reciprocate therewithin, a first tapered end portion for engaging said medial portion, and an opposing larger end portion for receiving said shim and a substantial portion of said outer cylindrical shell of said housing, but not said flanged base; and having an outer thread; and

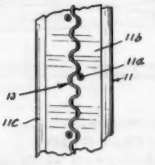
(iv) a retainer cap having an inner thread adapted to engage with said outer thread of said photodiode housing assembly and having an inner portion adapted to engage said flanged base of said housing, whereby said receptacle is mated to said plug, as they are engaged, wherein said pin reaches its seat in said receptacle slightly before said receptacle is fully seated so that said compression spring remains under load.

4,285,573

LIGHT REFLECTIVE BICYCLE SAFETY DEVICE AND METHOD OF MAKING THE SAME

Richard W. Stone, Minneapolis, Minn., assignor to Industrial Design and Engineering, Minneapolis, Minn.

Continuation-in-part of Ser. No. 590,935, Jun. 27, 1975, abandoned. This application Apr. 4, 1977, Ser. No. 784,543
Int. Cl.³ G02B *5/12*
U.S. Cl. 350—99 **3 Claims**



1. The method of producing a light reflective strip for bicycle wheels comprising,

providing an elongated strip of relatively thin light-weight malleable material,

corrugating said strip of material to produce alternate ridges and valleys of substantial depth therein,

at least partially flattening the corrugations along only one marginal edge portion of the strip to reduce the depth of said ridges and valleys along said one marginal edge portion thereof and thus increase the length of that edge portion as compared with the other marginal edge of said corrugated stip and produce a curved strip wherein the flattened portions form the larger radius of curvature thereof, and

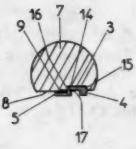
applying light reflective material to the surfaces of said strip.

4,285,574

DEVICE FOR READING CODED NOTCHES ON KEYS

Paul Lipschutz, Croissy, France, assignor to Neiman S.A., Courbevoie, France

Filed Nov. 29, 1979, Ser. No. 98,452
Claims priority, application France, Dec. 13, 1978, 78 35020
Int. Cl.[3] G02B 27/02
U.S. Cl. 350—114 5 Claims



1. A device for reading the combination of a flat elongated key provided with coded notches on at least one elongated edge, comprising:

(a) an elongated magnifier of transparent material defined by a curvilinear surface on one side of the magnifier through which the image to be viewed by the user emerges and two substantially planar surfaces on the other side, said planar surfaces being contained in planes substantially parallel to and offset from each other thereby forming between them an elongate abutment shoulder for positioning a key, the combination of which is to be read,

(b) a plurality of spaced apart parallel lines provided on one of said planar surfaces and extending longitudinally of the magnifier and positioned near to said shoulder, the spacing of said lines corresponding to the individual key notch depths, and

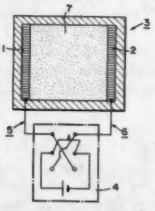
(c) a plurality of coding indices provided on said one planar surface on the side of the spaced parallel lines remote from said shoulder, said indices identifying said parallel lines respectively, whereby when a notched key is placed with a rectilinear portion thereof engaging the abutment shoulder the notched edge of the key is disposed against a background comprising said parallel lines, the coded values of said notches are readable.

4,285,575

IMAGE DISPLAY DEVICE

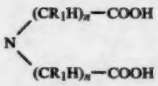
Hiroyuki Imataki, Kawasaki; Michiko Takahashi, Tokyo; Masatsune Kobayashi, and Tokuya Ohta, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,971
Claims priority, application Japan, Feb. 15, 1978, 53-16763
Int. Cl.[3] G02F 1/17
U.S. Cl. 350—357 13 Claims



1. An image display device which comprises a cell container, at least a pair of electrodes, and an electrically responsive electrochromic medium accomodated in said cell container, said electrochromic medium comprising a complexon, a redox reactive organic substance, Fe^{+2} ion and at least one metal ion which is (a) other than a Fe^{+2} ion (b) other than an Fe^{+3} ion and (c) other than an alkali metal ion, wherein said complexon is a member selected from the group consisting of:

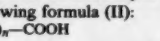
(1) an aminocarboxylic acid compound containing 1 to 3 aminocarboxylic acid groups represented by the following formula (I)



(I)

wherein R_1 represents hydrogen, methyl or hydroxyphenyl and n is 1 or 2;

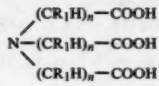
(2) an aminocarboxylic acid compound containing 1 to 2 aminocarboxylic acid groups represented by formula (I) above and 1 to 2 aminocarboxylic acid groups represented by the following formula (II):



(II)

wherein R_1 and n have the same meaning as in formula (I);

(3) an aminocarboxylic acid compound containing an aminocarboxylic acid group represented by the following formula (III):



(III)

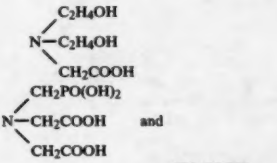
wherein R_1 and n have the same meaning as in formula (I);

(4) an aminocarboxylic acid compound containing 2 aminocarboxylic acid groups represented by the following formula (IV):

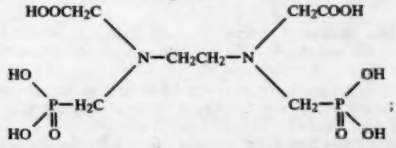
(IV)

wherein R_1 and n mean the same as in formula (I);

(5) an aminocarboxylic acid compound selected from the group consisting of



and

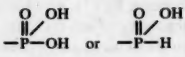


;

(6) nitrogen, phosphorus and arsenic homologues thereof containing 1 to 2 groups represented by the following formula (V):

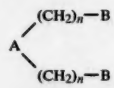
(V)

wherein n is 1 or 2, A represents N, P or As and B represents —COOH,



with the proviso that B is not —COOH when A is N;

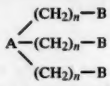
(7) nitrogen, phosphorus and arsenic homologues thereof containing 1 or 2 groups represented by the following formula (VI):



(VI)

wherein n, A and B mean the same as in formula (V);

(8) nitrogen, phosphorus and arsenic homologues thereof containing 1 group represented by the following formula (VII):



(VII)

wherein n, A and B mean the same as in formula (V); and

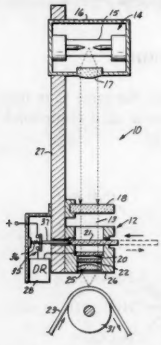
(9) mixtures thereof.

4,285,576

LIGHT GATING METHODS AND APPARATUS

Thomas H. Garland, El Monte, and Michael T. Zimmerman, Arcadia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed May 7, 1979, Ser. No. 36,489
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—387 **6 Claims**



1. In a method of selectively gating light with an array of electrically switchable light gates, the improvement comprising in combination the steps of:

providing said electrically switchable light gates in an electrooptically active solid-state material displaying field-induced and photoinduced birefringence;

locating said light gates between a light polarizer situated in a first region and a complementary light analyzer situated in a second region;

providing a source of light for illuminating said light gates;

polarizing light from said source with said polarizer by emitting light from said source through said polarizer in said first region;

providing electric potentials externally of said array of light gates for selectively switching said light gates;

illuminating said light gates with said polarized light and selectively switching said illuminated light gates through field-induced birefringence by selective application of said electric potentials to said light gates until photoinduced birefringence occurs in said array;

removing said polarizer from said first region; and

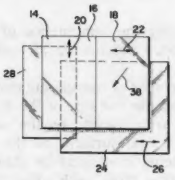
neutralizing said photoinduced birefringence by illuminating said light gates with light from said source through said first region while maintaining said polarizer removed from said first region and externally provided electric potentials away from said light gates.

4,285,577

WINDOW SYSTEM COMPRISING LIGHT POLARIZERS

Norman W. Schuler, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 2, 1977, Ser. No. 830,208
Int. Cl.³ G02F *1/01*
U.S. Cl. 350—403 **5 Claims**



1. A light polarizing window comprising:

a first light polarizing element having its absorption axis aligned in a predetermined direction;

a second light polarizing element substantially parallel and superposed with a portion of said first light polarizing element and having its absorption axis perpendicular to the absorption axis of said first light polarizing element;

a third light polarizing element adjacent to said second light polarizing element and coincident with the plane of said second element, said third element being superposed with a portion of said first element and having its absorption axis parallel to the absorption axis of said first polarizer; and

a wave retarder of $\frac{1}{4}$, 3/2 or 5/2 waves of retardation with respect to a given wavelength of the visible light spectrum slidably mounted between said first polarizer element and said second and third polarizing elements from a first position where it is between said first and second polarizer elements to a second position where it is between said first and third polarizer elements to effect maximum light transmission or minimum light transmission through said window.

4,285,578

PHOTO EYEPIECE FOR ENDOSCOPES

Nobuo Yamashita, Tama, and Miwako Maeda, Hino, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

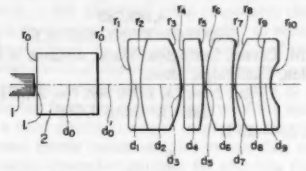
Filed Nov. 7, 1978, Ser. No. 958,496
Claims priority, application Japan, Nov. 16, 1977, 52/138283
Int. Cl.³ G02B *9/34, 25/00*
U.S. Cl. 350—410 **4 Claims**

1. A photo eyepiece for endoscopes comprising a positive cemented meniscus lens component having a concave surface on the object side, a positive lens component, a positive meniscus lens component having a convex surface on the object side and a negative cemented meniscus lens component having a convex surface on the object side, and said photo eyepiece system satisfying the following conditions:

(1) $\nu_{1p}-\nu_{1n}>\nu_{2p}-\nu_{2n}$

(2) $0.43f<R<0.47f$ wherein the reference symbols ν_{1p} and

ν_{1n} represent Abbe's numbers of the positive and negative elements respectively of said positive cemented meniscus lens component, the reference symbols ν_{2p} and ν_{2n} designate Abbe's numbers of the positive and negative elements



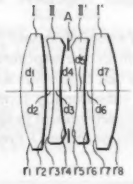
respectively of said negative cemented meniscus lens component, the reference symbol R denotes radius of curvature on the surface located on the extreme image side and the reference symbol f represents focal length of the photo eyepiece system as a whole.

4,285,579

COPYING LENS SYSTEM

Yu Yamada, Kokubunji, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 99,892
Claims priority, application Japan, Dec. 15, 1978, 53-156105
Int. Cl.³ G02B *9/36*
U.S. Cl. 350—470 **9 Claims**



1. A copying lens system comprising, in succession from the object side, a first biconvex positive lens, a first biconcave negative lens, a diaphragm, a second biconcave negative lens identical to said first biconcave negative lens, and a second biconvex positive lens identical to said first biconvex positive lens, said system satisfying the following conditions:

$$0.298F < f_1 < 0.378F$$

$$-0.41F < f_2 < -0.312F$$

$$1.54 < r_2/r_3 < 2.38$$

$$0.064 < N_1 - N_2 < 0.146$$

where

F: the focal length of the entire lens system

f_1: the focal length of the first and second biconvex positive lenses

f_2: the focal length of the first and second biconcave negative lenses

r_2/r_3: the ratio of curvature radii of the adjacent surfaces of the biconvex positive lens and the biconcave negative lens

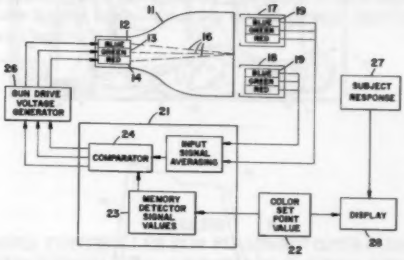
N_1-N_2: difference between the refractive index of the biconvex positive lens and the refractive index of the biconcave negative lens

4,285,580

COLOR VISION PERCEPTION TESTING DEVICE

William C. Murr, Piedmont, Calif., assignor to Synemed, Inc., Berkeley, Calif.

Filed Nov. 8, 1979, Ser. No. 92,524
Int. Cl.³ G03F *3/08*; A61B *3/02*
U.S. Cl. 351—35 **10 Claims**



1. An apparatus for producing a controlled color light signal, comprising a light source capable of producing and displaying any combination of the three primary colors; photodetector means for sensing the primary color output of said light source and generating a detector signal in response thereto; first storage means for storing a plurality of predetermined detector signal values corresponding to a unique combination of specific color output values of said light source; comparator means for comparing said detector signal with one of said stored detector signal values corresponding to a desired specific color output of said light source, and for generating a comparator signal in response to differences therebetween; and control means for receiving said comparator signal and correcting the output of said light source in response thereto to display said unique combination of color output values.

4,285,581

MULTIPURPOSE FILM HANDLING CASSETTE HAVING A MODULAR FILM PROCESSOR

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 108,521
Int. Cl.³ G03C *11/00*
U.S. Cl. 352—130 **7 Claims**

1. An applicator for depositing a coating of processing fluid on a moving run of photographic film strip, the applicator comprising:

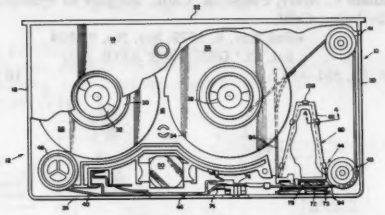
a fluid reservoir having an opening in an exterior surface through which processing fluid may pass;

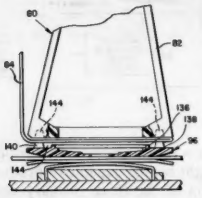
a nozzle plate having a fluid opening therein and a reservoir-facing surface normally spaced from said reservoir exterior surface thereby defining a space therebetween, said nozzle plate being configured to be urged toward said reservoir exterior surface, to sealingly engage and cooperate with said reservoir exterior surface so that fluid will flow only through said nozzle plate opening when said plate and reservoir are so engaged;

a tear tab having a first length thereof positioned in said space defined between said reservoir and said nozzle plate in sealing engagement around said opening in said reservoir exterior surface to initially seal processing fluid in said reservoir, said first length passing from said space between said reservoir exterior surface and said reservoir facing surface to a position wherein it is operative, responsive to advancing removal thereof from said reservoir exterior surface for releasing said fluid from said reservoir; and

means structurally attached to said reservoir for removably supporting said nozzle plate in said spaced relationship with said reservoir exterior surface and with at least said

first length of said tear tab positioned in said space defined therebetween, whereby upon removal of said first length





of said tear tab from said space between said nozzle plate and said reservoir, said nozzle plate may move into sealing engagement with said exterior surface of said reservoir.

4,285,582

LIGHT MEASURING APPARATUS

Masaru Yamazaki, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 816,711, Jul. 18, 1977, abandoned. This application Jan. 11, 1979, Ser. No. 2,764

Claims priority, application Japan, Jul. 22, 1976, 51-86611; Jul. 29, 1976, 51-89722; Jul. 29, 1976, 51-89723

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—23 D **8 Claims**

1. A light measuring apparatus for measuring the intensity of incident light, comprising:

photoelectric means coupled to said ligh• for generating photoelectric current in dependence on the intensity of said incident light;

capacitor integrating means coupled to said photoelectric means for integrating for a predetermined time period the photoelectric current so as to produce an integrated electric charge in said capacitor integrating means which is proportional to the total quantity of said light incident to said photoelectric means for said predetermined time period;

a constant current source capable of generating current of at least one constant current level;

control means coupled to said capacitor integrator means and said constant current source for controlling the discharging/charging of the electric charge of said capacitor integrating means through said constant current circuit so as to vary the voltage of said capacitor integrating means;

said capacitor integrating means comprising a plurality of parallel connectable capacitors adapted to be successively connected in parallel to the previously connected capacitor under the control of said control means, and

said control means comprising,

shift register means coupled to each of said capacitors for controlling the charging/discharging of each of said capacitors,

comparator means coupled to said capacitors and said shift register means for actuating said shift register means to connect a respective succeeding capacitor additionally in parallel to the previously connected capacitor each time the voltage of the respective previously parallel connected capacitors reaches a predetermined comparison voltage applied to said comparator means, and

means for applying said predetermined comparison voltage to said comparator means.

4,285,583

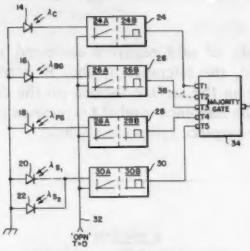
PHOTOMETRIC DEVICE

Joseph M. Canter, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 13, 1979, Ser. No. 93,261

Int. Cl.³ G03B *7/093*

U.S. Cl. 354—23 D **16 Claims**



1. A photometric device for determining the exposure interval for a scene to be photographed, said photometric device comprising:

a photometric array including a plurality of photo-responsive cells each for receiving light reflected from a selected portion of a scene to be photographed and each providing an electrical output responsive to the light incident thereon; and

an electronic means coupled to said photo-responsive cells for, upon initiation of the exposure interval, integrating the output of each cell to provide an integrated output for each cell and for subsequently terminating said exposure interval when a predetermined percentage of said so-integrated outputs meet or exceed a predetermined film exposure value.

4,285,584

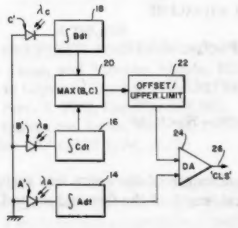
PHOTOMETRIC DEVICE

Joseph M. Canter, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 2, 1979, Ser. No. 81,207

Int. Cl.³ G03B *7/083*

U.S. Cl. 354—31 **33 Claims**



18. An exposure control system for controlling the exposure interval of a photographic camera of the type having a shutter means that is adapted, upon initiation of a film exposure interval, to admit light from a scene to be photographed into the camera to expose photographic film within the camera and

which is adapted to terminate the exposure interval in response to a shutter close command signal, said system comprising:

a photo-responsive means for receiving light from the scene to be photographed, said photo-responsive means including a first photo-responsive portion adapted to receive the light reflected from the foreground portion of the scene and provide a first electrical input responsive thereto, a second photo-responsive portion adapted to receive the light reflected from the background portion of the scene and provide a second electrical output responsive thereto, and a third photo-responsive portion adapted to receive light reflected from the central portion of the scene and provide a third electrical output responsive thereto;

first electronic circuit means coupled to said first and said second photo-responsive portions for selecting the maximum electrical output of said first and said second electrical outputs; and

second electronic circuit means coupled to said third photo-responsive portion and said first electronic circuit means for providing a shutter close command signal responsive to said third electrical output and said so-selected maximum electrical output of said first and said second electrical outputs, the exposure indication being increased when the illuminance of the light incident on said so-selected photo-responsive portion as indicated by said so-selected maximum electrical output exceeds the illuminance incident on said third photo-responsive portion as indicated by said third electrical output and the film exposure indication being decreased when the illuminance of the light incident on said third photo-responsive portion as indicated by said third electrical output exceeds the illuminance of the light incident on said so-selected photo-responsive portion as indicated by said so-selected maximum electrical output.

4,285,585

EXPOSURE CONTROL COMPENSATING MEANS FOR CLOSE-UP PHOTOGRAPHY

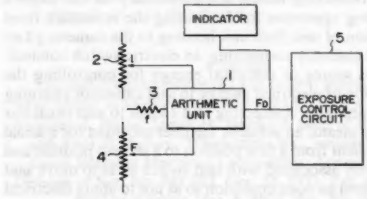
Saburo Numata, Urawa, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Filed May 3, 1979, Ser. No. 35,449

Claims priority, application Japan, May 4, 1978, 53-53319

Int. Cl.³ G03B *15/05, 7/20*

U.S. Cl. 354—33 **5 Claims**



1. In a camera, exposure control apparatus including means for automatically compensating exposure control for close-up photography in accordance with the formula

$$FD = F \cdot \left(\frac{l}{l-f}\right)$$

where

FD=effective F-value

F=a preselected F-value

l=the actual distance from the camera lens to an object to be photographed

f=the actual focal length of the lens,

and wherein the value of $l/(l-f)$ is always greater than 1, said means comprising:

(a) an arithmetic unit;

(b) an F-value input means connected to said arithmetic unit;

(c) distance information input means connected to said arithmetic unit;

(d) a focal length information input means connected to said arithmetic unit;

(e) said arithmetic unit providing an effective F-value exposure control output according to said formula based on said inputs.

4,285,586

CAMERA CONTROLLER FOR FLASHGUN OPERATION

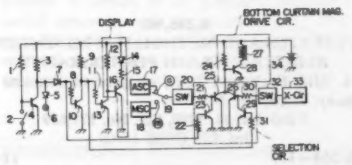
Masahiro Kawasaki, Tokyo, and Sinji Urata, Tachikawa, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1979, Ser. No. 63,305

Claims priority, application Japan, Aug. 25, 1978, 53-117217[U]

Int. Cl.³ G03B *15/03, 17/18*

U.S. Cl. 354—34 **9 Claims**



1. A device for providing multi-mode camera shutter control according to flashgun mounting and flashgun charging status, said camera having electrically controlled automatic shutter operating means, manual shutter operation means, and X shutter control means for flashgun operation, said device for providing multi-mode camera shutter control comprising:

a detection switch means for detecting the presence of a flashgun on said camera;

an input terminal providing an indication of the charge on said flashgun; and

multi-mode control means for controlling said camera shutter according to one of said automatic shutter operation means and said manual shutter operation means

(i) when said detection switch means detects a flashgun, said flashgun has a charge output terminal, and said input terminal indicates an insufficient charge on said flashgun in response to said charge output terminal, and

(ii) when said detection switch means does not detect a flashgun; and

said multi-mode control means controlling said camera shutter according to said X shutter control means

(i) when said detection switch means detects a flashgun, said flashgun has a charge output terminal, and said input terminal indicates a sufficient charge on said flashgun in response to said charge output terminal, and

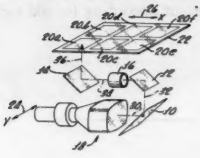
(ii) when said detection switch means detects a flashgun, and said flashgun has no charge output terminal connected to said input terminal,

whereby said device for providing multi-mode camera shutter control may be used with either a flashgun having a charge output terminal, or a flashgun without a charge output terminal.

4,285,587
COMPACT MULTIPLE IMAGE CAMERA

Otto M. Schiff, Irvine, and Vitolds Rikis, Mission Viejo, both of Calif., assignors to Schiff Photo Mechanics, Santa Ana, Calif.

Filed Jun. 9, 1980, Ser. No. 157,674
Int. Cl.[3] G03B 29/00, 1/00, 27/42, 27/70
U.S. Cl. 354—124 34 Claims

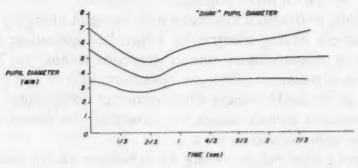


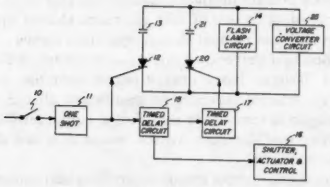
1. A multiple image camera comprising
a camera housing,
a video monitor mounted in said housing for bi-directional motion in a transverse direction relative to the housing,
film transport means mounted in said housing for bi-directional transport of film in a longitudinal direction relative to the housing, and
means for transmitting an image of an object from said monitor for reception by film transported by the transport means.

4,285,588
APPARATUS AND METHOD FOR MINIMIZING RED-EYE IN FLASH PHOTOGRAPHY

Jose M. Mir, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 24, 1980, Ser. No. 171,639
Int. Cl.[3] G03B 15/03
U.S. Cl. 354—137 11 Claims



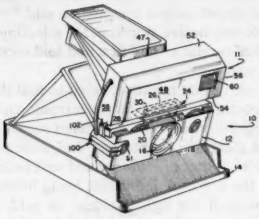


1. In photographic apparatus for recording still pictures with supplementary illumination and including shutter means actuatable to an aperture-open condition and to an aperture-closed condition, flash means actuatable for providing supplementary illumination and means for actuating said shutter and flash means to initiate and terminate an exposure period of a picture-taking operation, the improvement comprising means for providing a subject-conditioning, illumination pulse which is of a predetermined energy and commences a predetermined period prior to the initiation of said exposure period to effect a substantial reduction of subject's eye-pupil diameter, said predetermined period having a magnitude in the range of from about 0.35 to about 0.60 seconds.

4,285,589
SWITCH CONTROL FOR CAMERA FLASH UNIT

David Van Allen, Malden, and Fred M. Finnemore, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 23, 1978, Ser. No. 889,248
Int. Cl.[3] G03B 15/05
U.S. Cl. 354—145 8 Claims



1. An electronic flash unit for use with a camera of the type which the photographer would normally hold in one hand and operate with his other hand and which includes a photographic exposure cycle initiating button together with means for providing a flash fire trigger signal at an appropriate time during the photographic exposure interval together with connecting apparatus for accommodating the removable fixed connection of said flash unit with respect to the camera, said flash unit comprising:
a first housing;
a storage capacitor;
a flash discharge tube;
means responsive to an applied voltage for charging said capacitor;
circuit means responsive to the trigger signal for discharging said capacitor through said discharge tube to produce an illuminating flash of light;
electrical connecting means for facilitating the electrical connection of said circuit means to the trigger signal providing means of the camera;
physical connecting means complementary to the camera connecting apparatus for facilitating the releasable fixed connection of said flash unit housing to the camera; p1 an actuator assembly comprising: an electric switch connectable to a source of electrical energy for controlling the application of electrical energy to said capacitor charging means, means for connecting said switch to said capacitor charging means, an actuator member mounted for manual displacement from a first position to a second position and operatively associated with said switch so as to move said switch from an open condition so as not to apply electrical energy to said capacitor charging means, to a closed condition so as to apply electrical energy to said capacitor charging means when said actuator is moved from its said first position to said second position, resilient means for yieldably biasing said actuator member to move from its said second position back to its said first position, means for facilitating the releasable fixed connection of said actuator assembly to the camera so as to locate said actuator member in closely spaced apart relation with respect to the camera photographic cycle initiating button thereby enabling the photograher to first apply electrical energy to said capacitor charging means by moving said actuator member from its said first position to its said second position with the thumb of his camera operating hand and to thereafter, without substantially changing the position of his camera operating hand initiate a photographic exposure cycle by actuating the photographic

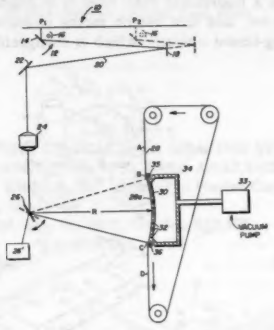
cycle initiating button with the forefinger of his same camera operating hand.

4,285,590

PRECESSION SCANNING SYSTEM FOR COPIER DEVICE

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1980, Ser. No. 197,384
Int. Cl.³ G03G *15/28;* G03B *27/60*
U.S. Cl. 355—8 **5 Claims**



1. A scanning system for projecting light images of a stationary object at an object plane along an optical path onto a curved portion of a photoreceptor moving in a first direction comprising

scanning illumination means for scanning said object,

projecting means for transmitting said scanned object images,

reflecting means positioned between said projecting means and said photoreceptor for directing said transmitted image into a curved exposure zone of said photoreceptor,

means for introducing said curvature of said photoreceptor in said exposure zone, said curved portion having a radius defined as an arc of a circle equal to the distance between said curved portion and the center of said reflecting means,

means for rotating said reflecting means so as to reflect said transmitted image along said curved portion in a direction opposite to said first direction.

4,285,591

COMPUTER-CONTROLLED COPY PRODUCTION MACHINE HAVING JOB SEPARATION CAPABILITIES

Anthony J. Botte; James H. Hubbard, both of Boulder, Colo., and Paul R. Spivey, Winchester, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 841,623, Oct. 13, 1977, Pat. No. 4,201,464. This application Dec. 3, 1979, Ser. No. 99,383
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 C **4 Claims**

1. In a copy production machine having operating means comprising image input means, copy production means, copy output means having a given capacity, and copy sheet transport path means extending between said copy production means and said copy output means for transporting copy sheets therebetween, copy sheet source means for supplying copy sheets to said copy production means to receive images, the improvement comprising, in combination:

programmable processor means for executing computer programs and having input register means for receiving signals to be operated upon in accordance with computer programs and output register means for supplying control signals to said machine generated in accordance with execution of computer programs;

means included in said operating means coupled to said input register means for supplying status signals to said processor;

actuating means in said operating means coupled to said output register means for receiving control signals to control operation of said operating means;

console means including a plurality of switch means coupled to said input register means for providing operating parameters to control said processor means in operating said machine and a plurality of indicator means coupled to said output register means for displaying the status of said machine;

control memory means included in said processor means for storing a plurality of computer program means sensible and executable by said processor to enable said processor means to supply said control signals in response to said status signals and said parameter signals to operate said machine to produce a console-selected number of copies of each image supplied by said image input means to said copy producing means in succession of copy production runs,

said program means including

means for responding to one of said plurality of switch means indicating, when actuated, that copy sheets are to be supplied from said copy sheet source means and including inhibiting means for preventing the copying of images onto said supplied copy sheets whereby said supplied copy sheets become separator sheets,

means for limiting a production run to said output means given capacity if the operating parameter representing a number of copies to be produced supplied by said switch means exceeds said given capacity, and

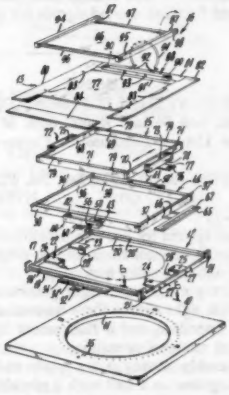
means for indicating cumulative copies produced in a series of copy production runs in response to said one of said plurality of switch means being actuated.

4,285,592

MULTIDIRECTIONAL PHOTOGRAPHIC COMPOUND STAGE

Richard Sassenberg, 422 Ward Ave., Mamaroneck, N.Y. 10543

Filed Aug. 4, 1980, Ser. No. 175,297
Int. Cl.³ G03B *27/42*
U.S. Cl. 355—53 **10 Claims**



1. A multidirectional compound stage for photographic reproduction of images comprising a relatively thick base having an opening therein defined by a circular wall, a first carriage having rollers extending from the bottom thereof and engaging the said circular wall to permit rotary motion of said carriage, a pair of spaced parallel tracks on said carriage, a second carriage overlying said first carriage and having at least two sets of rollers engaging said tracks for movement of said

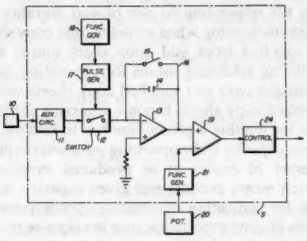
second carriage linearly in one direction relative to the first carriage, a pair of spaced parallel tracks carried by said second carriage and positioned at ninety degrees to the first said tracks, a third carriage overlying said second carriage and having at least two sets of rollers engaging the lest said tracks for movement of said third carriage in a direction at ninety degrees relative to the motion of said second carriage and a light transmitting operating surface carried by said third carriage.

4,285,593

CIRCUIT FOR THE CONTROL OF EXPOSURE TIME IN PHOTOGRAPHIC ENLARGING EQUIPMENT

Alex Vinatzer, Brixen, Italy, assignor to Durst AG Fabrik Fototechnischer Apparate, Bozen, Italy

Filed Jul. 25, 1979, Ser. No. 60,298
Claims priority, application Italy, Sep. 7, 1978, 4860 A/78
Int. Cl.³ G03B *27/80*
U.S. Cl. 355—68 **12 Claims**



1. In a system for the control of exposure time in photographic enlarging equipment having a variable enlargement ratio, the improvement comprising: means, including light sensitive transducing means, for the generation of a first electrical signal indicating light quantity, said light sensitive transducing means positioned a fixed distance to a negative plane of the enlarging equipment; a signal generator responsive to an enlargement ratio for generating a second electrical signal which is a function of said enlargement ratio; and means responsive to said first and second signals for determining exposure time.

4,285,594

OPTICAL SYSTEM FOR DENSITOMETER

Gene A. Butts, and Samuel Rhine, both of Beaumont, Tex., assignors to Helena Laboratories Corporation, Beaumont, Tex.

Filed Jul. 27, 1979, Ser. No. 61,201
Int. Cl.³ G01N *21/01, 21/64*
U.S. Cl. 356—72 **6 Claims**

1. An optical system for use in a densitometer which generates optical density signals for a sample prepared electrophoretically, said optical system including:

light generating means, said light generating means including a visible light source for a transmission densitometry mode of operation and a fluorescent light source for a fluorescent mode of operation;

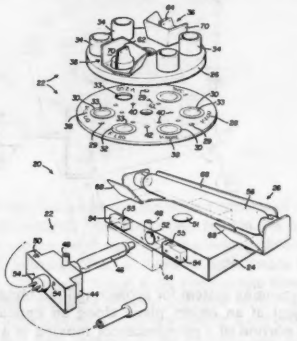
a turret assembly having a top plate and a bottom plate secured together as a unit with a plurality of filters sandwiched between said top and bottom plate at spaced radial positions, said plates having aligned openings above and below said filters to permit light to pass through said filters for detection, said plate-filter unit being rotatably mounted on a post assembly;

a photo-responsive detector;

said turret assembly including said plate-filter unit, post assembly, and photo-responsive detector being mounted to a housing, said detector being substantially encased within said housing and said housing having an opening to permit light radiation to impinge on said detector; and

said plate-filter unit being selectively rotatable above said opening such that a desired filter is rotated into position above and in alignment with said detector to optimize the resolution of the light detected by said photo-responsive detector;

said turret assembly having visible light filters and fluorescent light filters, first switch means mounted to said housing, said first switch means cooperating with said plate-filter unit to turn off said fluorescent light source except when a fluorescent light filter is in alignment with said detector, said first switch means including at least one spring-biased operator which is engageable with and extendable into a depression in said bottom plate when a fluorescent light filter is aligned with said detector thereby turning on said fluorescent light source, said operator being depressed by said bottom plate and out of engagement with said depression to turn off said fluorescent light source when said visible filters are aligned with said detector; and



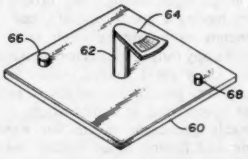
turret barrels mounted to said plate-filter unit above said visible light filters to protect said detector from stray light which may be present during said transmission mode of operation and slit assemblies mounted to said plate-filter unit above said fluorescent light filters to define the amount of light and the area of the sample seen by the detector in the fluorescent mode of operation.

4,285,595

MODULAR ENCODER

Ronald W. Fryer, Santa Barbara, and Jess Guerra, Goleta, both of Calif., assignors to Electro-Craft Corporation, Hopkins, Minn.

Division of Ser. No. 868,887, Jan. 12, 1978, Pat. No. 4,184,071.
This application Jul. 27, 1979, Ser. No. 61,304
Int. Cl.³ G01D *5/34*
U.S. Cl. 356—150 **2 Claims**



1. A fixture for pre-aligning an optical encoder stator with a housing in which a sensor and light source are installed to permit said housing to be installed comprising:

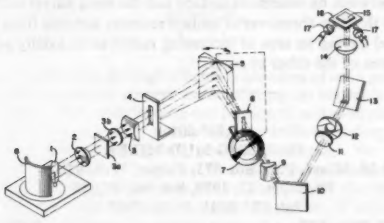
a base plate;
a shaft segment mounted on said base plate;
means for attaching said housing to said base plate with an axis of said housing aligned with the center line of said shaft segment;
an encoder disc segment mounted with its center line aligned with said axis of said shaft segment at a height above said base plate corresponding to the separation between said encoder disc and said base plate, said encoder disc segment positioned in the path between said light source and said sensor mounted on said housing to permit optical alignment of said stator with said housing prior to actual installation of said encoder on said base plate.

4,285,596

HOLOGRAPHIC DIFFRACTION GRATING SYSTEM FOR RAPID SCAN SPECTRAL ANALYSIS

Isaac J. Landa, Wheaton, Md., assignor to Neotec Corporation, Silver Spring, Md.

Filed Aug. 16, 1977, Ser. No. 825,155
Int. Cl.³ G01J *3/06*
U.S. Cl. 356—308 **24 Claims**



1. Optical apparatus for analyzing a sample comprising a concave diffraction grating operable to disperse impinging light radiation into narrow bandwidth components, means to oscillate said diffraction grating, optical means for projecting light radiation on the oscillating grating, an entrance slit located between said optical means and the grating, an exit slit positioned to receive the light radiation dispersed by said grating, photosensing means for detecting light radiation that has passed through said exit slit, a wheel located in the path of said dispersed light radiation having at least one dark segment and at least one light transmitting segment, and means to rotate said wheel in synchronism with the oscillation of said grating so that said dark segment is positioned to interrupt the light radiation when said grating is at one of its extreme positions.

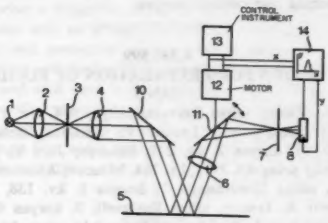
4,285,597

GONIOPHOTOMETER FOR MEASURING THE GLOSS AND/OR LIGHT DIFFUSION OF SURFACES

Josef Lamprecht, Ludwigshafen, and Gregor Ley, Wattenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 154,892
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1979, 2924241
Int. Cl.³ G01N *21/47*
U.S. Cl. 356—446 **2 Claims**

1. A goniophotometer for determining the gloss and/or haze of surfaces, comprising a light source, one or more convex lenses for illuminating the surface, a field stop in the image plane of the light source, and a light detector, wherein a rotat-



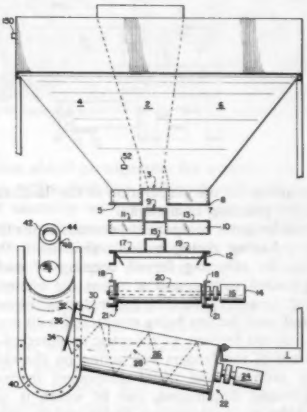
ably mounted mirror is located between said surface and said field stop.

4,285,598

CONCRETE MIXING APPARATUS

Thomas Horton, 2220 Kenbridge Cir., Hoover, Ala. 35226

Filed Dec. 10, 1979, Ser. No. 102,434
Int. Cl.³ B28C *5/12, 5/42, 7/06, 7/12*
U.S. Cl. 366—15 **14 Claims**



1. A device for mixing measure amounts of concrete from fluid and dry ingredients including cement, comprising:
a frame;
a plurality of hoppers for storing said dry ingredients mounted on said frame, said plurality of hoppers including a cement hopper;
a tank for storing said fluid mounted on said frame;
a metering slide assembly having a slide with a plurality of compartment-like metering slide chambers, said metering slide oscillating from a first position for receiving into said chambers a predetermined amount of dry ingredients from said hoppers to a second position for discharging said predetermined amounts of dry ingredients;
mixing and moving means for mixing the dry ingredients with said fluid and dispensing the resultant concrete in the desired location; and
hydraulic drive and control means for driving said metering slide assembly and said mixing and moving means and for controlling the consistency and amount of concrete dispensed, said drive and control means being capable of overcoming binding resulting from set up of said concrete or dry ingredient;
said cement hopper being raised above the level of the other of said plurality of hoppers;

said metering slide assembly further including a grease barrier disposed between said metering slide and said cement hopper, said grease barrier preventing moisture from reaching said cement hopper.

4,285,599

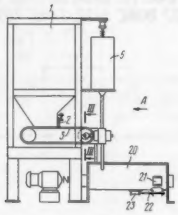
APPARATUS FOR PREPARATION OF FLUIDIZED SAND

Vitaly A. Zitser, ulitsa Pervomaiskaya, 9/4, kv. 17, Dolgoprudny Moskovskoi; Leonid V. Bachelis, Schelkovskoe shosse, 91, korpus 2, kv. 221, Moscow; Jury E. Morozov, Leninsky prospekt, 39/1, kv. 264, Moscow; Alexandr V. Melnikov, ulitsa Dorozhnaya, 7, korpus 1, kv. 138, Moscow; Vladimir A. Ivanov, ulitsa Rustaveli, 3, korpus 6, kv. 34, Moscow; Igor I. Dreishev, Volgogradsky prospekt, 181, kv. 33, Moscow; Eduard G. Shartner, ulitsa Krylova, 4a, kv. 21, Karaganda; Vladimir D. Abaskalov, bulvar Mira, 47, kv. 30, Karaganda, and Vladimir A. Levinson, ulitsa N. Abdirova, 46/2, kv. 47, Karaganda, all of U.S.S.R.

Filed Aug. 10, 1979, Ser. No. 65,507

Int. Cl.³ B28C *7/04*

U.S. Cl. 366—17 **2 Claims**



1. An apparatus for the preparation of the fluidized sand for use in foundry practice, comprising:

a container for loose components; containers for liquid components, having spring-loaded valves built therein; an actuator for effecting forced opening of each of said spring-loaded valves, and a means for controlling said actuator; feeders for feeding and metering the materials to be mixed, said feeders being connected with one another, a drive of said feeders; an eccentric mounted on a shaft of said drive of the feeders and acting on the said control device; each of said liquid-component feeders having spring-loaded diaphragms, one of which is adapted to control the loose-component feeder and the other is used to close an outlet from the liquid-component feeder.

4,285,600

INJECTION MOLDING MACHINE WITH MULTICHANNEL WAVE SCREW

George A. Kruder, Marion, Ohio, assignor to HPM Corporation, Mount Gilead, Ohio

Continuation-in-part of Ser. No. 917,204, Jun. 20, 1978, Pat. No. 4,173,417, which is a continuation-in-part of Ser. No. 788,028, Apr. 15, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 25,884

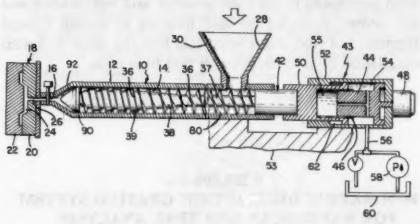
Claims priority, application United Kingdom, May 31, 1978, 26053/78

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—89 **26 Claims**

1. An injection molding apparatus comprising: a barrel having an inner wall and inlet and outlet openings, a rotatable and reciprocable screw disposed in said barrel means for rotating said screw about its axis and advancing said screw axially in said barrel toward the outlet opening, said screw including a section for enhancing substantially complete melting and mixing of resinous material plasticated by it comprising an outwardly extending conveying flight defining a helical passage, an outwardly extending barrier flight disposed intermediate said conveying flight to divide the helical passage into a pair of flow channels extending side by side helically along said screw section, each of said channels having a base surface whose radius from the screw axis of rotation varies cyclically through a plurality of cycles along the helical length of such channel to provide a channel of varying depth, with the variations of said



channels being arranged so that the combined cross-sectional area of said channels is not constant entirely throughout a cycle, the maximum base surface radius portion of the channels on opposite sides of said barrier flight adjacent each area of increasing radius being undercut to provide sufficient clearance between its outermost surface and the inner barrel wall to permit the flow thereover of molten resinous material from the channel having an area of increasing radius to an axially adjacent area of the other channel.

4,285,601

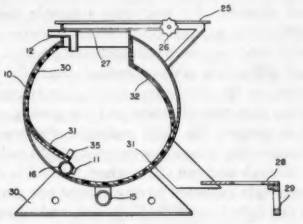
DRILLING MUD MIXER

Robert M. Miner, P.O. Box 373, Casper, Wyo. 82602

Filed Oct. 22, 1979, Ser. No. 87,049

Int. Cl.³ B01F *5/10, 15/02*

U.S. Cl. 366—137 **8 Claims**



1. A mixer for preparing drilling mud at a desired viscosity, comprising in combination,

a generally cylindrical tank,

a set of nozzles located axially along the tank about the internal periphery disposed to direct materials in a rotary flow pathway about the interior circumference of the tank,

path deflector means shaping the internal tank periphery to direct the rotary flow path into an elliptical orbit substantially symmetrical about the tank axis,

material input means for introducing drilling mud ingredients into the tank for mixing into the rotary flow pathway before encountering the nozzles,

means for introducing liquids into the tank to effect a change of drilling mud viscosity, and

means for removing drilling mud from a position near the internal periphery of said tank to circulate back through said nozzles.

4,285,602

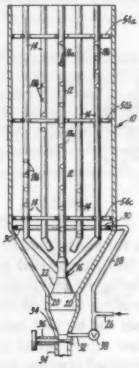
METHOD AND APPARATUS FOR THE BLENDING OF GRANULAR MATERIALS

Robert O. Hagerty, Bound Brook, N.J.; Jannan G. Lee, Houston, Tex., and Kenneth C. Yi, Belle Mead, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 38,738, May 14, 1979, abandoned. This application Oct. 9, 1979, Ser. No. 82,471

Int. Cl.[3] B01F *15/02*

U.S. Cl. 366—177 4 Claims



1. A method for the high efficiency blending of solid particulate materials which comprises: introducing the materials to be mixed into a bin; withdrawing one portion of said solid particulate materials by gravity through downwardly-extending main blending tube means having positioned, through the walls thereof, a plurality of material inlet passages positioned and dimensioned to provide unblocked or starved flow characteristics therethrough; withdrawing another portion of said solid particulate materials by gravity through a plurality of downwardly extending auxiliary blending tube means having positioned, through the walls thereof, a plurality of material inlet passages positioned and dimensioned to provide blocked flow characteristics therethrough; joining the portions of material in an enlarged section near the downstream ends all of said main blending tube and auxiliary blending tube means which joined portions of material are passed therefrom as a blended stream; and maintaining unblocked or starved flow characteristics in said main blending tube means while maintaining blocked flow characteristics in said plurality of auxiliary blending tube means.

4,285,603

WIRE PRINTING DEVICE

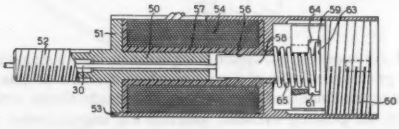
Francesco Bernardis, Ivrea; Contardo Adamoli, Castellamonte, and Franco Cretaz, Pont Saint Martin, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

Filed Apr. 17, 1979, Ser. No. 30,950

Claims priority, application Italy, Apr. 19, 1978, 67885 A/78

Int. Cl.[3] B41J *3/12*

U.S. Cl. 400—124 5 Claims



1. A wire printing device comprising a base member, a plurality of actuatable printing wires slidably mounted on said base member, and a plurality of driving electromagnets mounted on said base member for individually actuating said printing wires, wherein each one of said driving electromagnets comprises a magnetic circuit having a fixed central core, an excitation coil, an armature movable with respect to said fixed core and connected with a corresponding one of said printing wires and means for regulating the gap between said armature and said core leaving unaltered the stroke of said armature with respect to said core, said regulating means comprising an element screwable with respect to said fixed core having a first and a second shoulder between which said armature is movable.

4,285,604

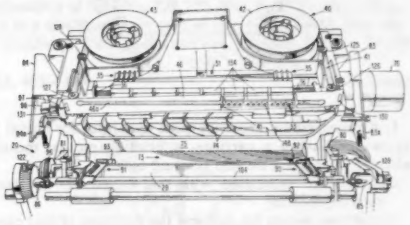
RIBBON SHIELD FOR PRINTER

Donald K. Rex, Highland Beach, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1979, Ser. No. 86,568

Int. Cl.[3] B41J *33/32*

U.S. Cl. 400—247 3 Claims



1. A ribbon shield arrangement for a printer unit having a print station with a print line, said print station incorporating a forms feed assembly with a platen supporting forms to be printed upon, a print assembly at said print station for printing upon said forms as they move past said print line, said print assembly incorporating a plurality of print heads, each of which comprises a plurality of print wires and a plurality of actuators and said print heads being mounted in an elongated array along said print line for printing information on said forms, said print wires and actuators being arranged along said print line in a nonconventional print wire pattern, such as a slanted serrated pattern, said print assembly incorporating means to reciprocate said print heads along said print line and to concurrently operate said print wire actuators in order to print on said forms, and a ribbon drive assembly arranged to drive a ribbon along said print line during printing operations, said shield arrangement comprising:

a one-piece detachable ribbon shield member, said ribbon shield member comprising a flexible elongated plastic or metallic element having at least one aperture substantially corresponding in size and dimensions to the largest area occupied by said print wires along said print line as said print heads are reciprocated along said print line and said ribbon shield member including a pair of slits therein located a predetermined distance apart in said ribbon shield member, one of said slits being located near each extremity of said ribbon shield member;

and

ribbon shield mounting means comprising a pair of complementary flat spring elements at each end of said print line, said elements extending toward said print line, said spring elements being respectively engageable with the pair of slits in said ribbon shield member to position said ribbon shield member along said print line, said ribbon shield mounting means being arranged to retain said ribbon shield between said forms and between said ribbon during printing operations to protect said forms and said ribbon but to allow printing through the elongated aperture in

said ribbon shield member by said print assembly during printing operations.

4,285,605

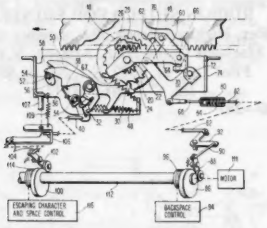
ESCAPEMENT MECHANISM AND BACKSPACE MECHANISM FOR A MOVING PAPER CARRIAGE TYPEWRITER HAVING DUAL PITCH CAPABILITY

Edward R. Lloyd, and Raymond M. Marowski, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,059

Int. Cl.³ B41J *19/62*

U.S. Cl. 400—310 **3 Claims**



1. An escapement and backspace apparatus for a dual pitch typewriter having a carriage, a printing means, means for selecting characters on said printing means,

said carriage associated with said typewriter to translate relative thereto:

escapement means for defining the positions of said carriage with respect to said typewriter and for moving said carriage through said positions in stepwise manner, in a selected one of a plurality of predetermined escapement pitches, said escapement means comprising, a plurality of escapement ratchets, each defining a separate escapement pitch, and a backspace ratchet, said ratchets associated to rotate together, the ratchet teeth on said backspace ratchet subtending an arc equal to the lowest common divisor of the angles subtended by the teeth on said escapement ratchets;

an escapement pawl operatively associated with each of said escapement ratchets,

means for withdrawing said escapement pawls from said escapement ratchets and thereafter releasing said escapement pawls for re-entry into the next tooth of said escapement ratchets,

operator controlled means for rendering all but one of said escapement pawls inoperative;

and a backspace pawl operative to engage said backspace ratchet and rotate said backspace ratchet in a backspacing direction by an arcuate increment greater than the arc subtended by the largest arc between teeth on said escapement ratchets.

4,285,606

ARRANGEMENT FOR DRIVING A PRINTING HEAD ALONG A PRINTING LINE

Felice Giacone, Giaveno, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy

Continuation of Ser. No. 745,321, Nov. 26, 1976, abandoned, which is a continuation of Ser. No. 575,758, May 8, 1975, Pat. No. 4,034,842. This application Aug. 14, 1978, Ser. No. 933,426

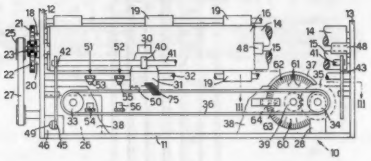
Claims priority, application Italy, May 10, 1974, 68471 A/74

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.³ B41J *19/30, 19/70*

U.S. Cl. 400—317.1 **5 Claims**

1. In a printer having a printing head, means defining a rest position for said head, means for advancing said head along a plurality of printing positions of a printing line in front of a recording medium in a forward movement at a substantially constant advancing speed starting from said rest position, and start printing means for causing said printing head to begin printing during said forward movement starting from a first of said printing positions to define a printing stage of said head, the improvement comprising: means defining a predetermined position of said printing positions along said printing line, beyond said first printing position, detecting means for detecting the passage of said head through said predetermined position during said printing stage, memory means connected to



said detecting means for storing whether said head during its forward movement has passed said predetermined position, first means for generating a signal indicative of a last character printed along said printing line, and second means controlled by said memory means and by said indicative signal for applying to said head a low return speed when said head has not reached said predetermined position during said printing stage and a high return speed of a value higher than said advancing speed when said head has passed said predetermined position during the printing stage.

4,285,607

APPARATUS FOR FEEDING SINGLE SHEETS FROM A MAGAZINE TO THE PRINTING CYLINDER OF A PRINTING OFFICE MACHINE OR DATA PROCESSING MACHINE AND FOR STACKING THE SINGLE SHEETS ARRIVING FROM THE PRINTING CYLIDER

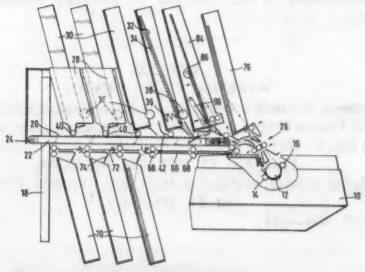
Helmut Steinhilber, Königstr. 47, 7210 Rottweil, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,389

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1979, 2905171

Int. Cl.³ B41J *11/58, 13/10*

U.S. Cl. 400—625 **16 Claims**



1. An apparatus for feeding single sheets from a magazine to the printing cylinder of a printing office machine or data processing machine and for stacking the single sheets arriving from the printing cylinder, wherein the improvement comprises:

a feed-in conveyor track (20) disposed substantially horizontally and leading to said printing cylinder (12);

at least two substantially vertical magazine units (30);

which are disposed above said feed-in conveyor track (20)

one after another in the direction of feed of sheets to the printing cylinder

and provided with separately controllable separation devices (38);

a delivery track (66, 68) disposed below said feed-in conveyor track (20) and leading away from said printing cylinder (12);

which are disposed below said delivery track one after another in the direction of delivery from the printing cylinder;

separately controllable delivery diverters (72) assigned to said stacking units (70) and provided in said delivery track (66, 68);

and a sheet guide (26) with an induction channel (52) leading from said feed-in conveyor track (20) to the induction side of said printing cylinder (12) and an ejection channel (54) leading from the ejection side of said printing cylinder to said delivery track (66, 68), said ejection channel crossing said induction channel (52).

4,285,608

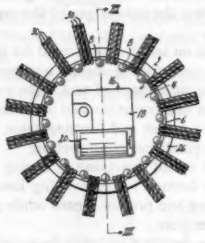
ORNAMENT MOUNTING BRACKET FOR MACRAME DESIGNS

Calvin E. Hoover, 6715 Verde Dr., Kansas City, Kans. 66104

Filed Jan. 14, 1980, Ser. No. 111,895

Int. Cl.³ F16D *9/00*; F16P *5/00*

U.S. Cl. 403—002 **8 Claims**



1. An ornament mounting bracket for macrame designs comprising:

a. a flat plate having forward and rearward surfaces and adapted to mount an ornament on its forward surface,

b. an open ring usually disposed in a plane spaced behind and parallel to the rearward surface of said plate, and adapted to have macrame cords secured therein, and

c. connecting means operable to secure said ring to said plate in said usual relationship thereto.

4,285,609

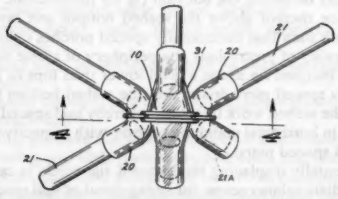
HINGE JOINT ASSEMBLY

John F. Runyon, 91 Kent St., Apt. 4, St. Paul, Minn. 55102

Filed Mar. 19, 1980, Ser. No. 131,622

Int. Cl.³ F16B *7/00*

U.S. Cl. 403—172 **10 Claims**



5. A hinge joint assembly for flexibly connecting a plurality of at least three elongated structural components in the construction of modular buildings, said hinge joint assembly comprising:

(A) a plurality of at least two lengths of resilient tubing,

(B) a body member having a plurality of at least two slot openings,

(1) at least two of the slot openings

(a) being adjacent to a peripheral edge of the body member and

(b) engaging a flattened portion of one of said lengths of tubing,

(2) the flattened portion of the tubing in each slot functioning as a hinge for relative movement of the adjacent unflattened portions, and

(3) the unflattened portion of said tubing spaced from the body member functioning as a socket to receive one end of an elongated structural component.

4,285,610

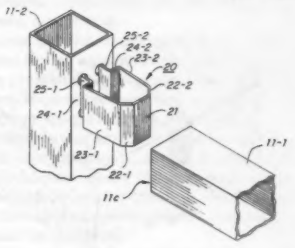
STRUCTURAL MEMBERS AND ASSEMBLAGES

Richard B. Rusch, 55 Flagg Rd., Southborough, Mass. 01772

Continuation of Ser. No. 739,109, Nov. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 645,428, Dec. 30, 1975, abandoned. This application Feb. 12, 1979, Ser. No. 11,408

Int. Cl.³ F16B *7/08*

U.S. Cl. 403—189 **7 Claims**



1. A connector for joining one member to another member having opposed parallel and planar interior wall surfaces, comprising

means for positioning the connector on the one member,

two spaced apart neck members extending outwardly from the positioning means,

and two side panels extending outwardly from respective ones of the neck members,

said side panels having side surfaces for simultaneously securely gripping the interior wall surfaces of said another member and compressing said neck members into clamping engagement with said one member.

4,285,611

ARRANGEMENT FOR THE RETAINING OF TUBES

Eberhard Willeitner, Utting a. Ammersee; Wilhelm Hirschmann, Friedberg; Erwin Maier, Freising; Georg Lammel, Olching, and Jurgen Hass, Munich, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,544

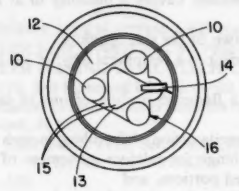
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824108

Int. Cl.³ F16B *2/14*

U.S. Cl. 403—374 **9 Claims**

1. An arrangement for retaining at least two tubes in substantially mutually parallel positions, comprising a single piece adapter having a single bore having a polygonal cross cross sectional shape through which the tubes are inserted, and a clamping element arranged in said bore between said tubes,

said clamping element including means for radially expanding in said single bore to bias said tubes in positions parallel to each



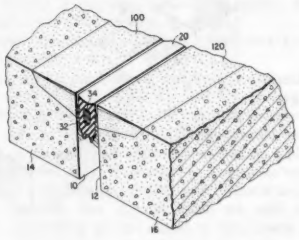
other against the wall of the single bore without causing an axial displacement of the tubes.

4,285,612

PROTECTIVE SHOULDER STRUCTURE FOR ROADWAY JOINTS

Pier L. Betti, Sao Paulo, Brazil, assignor to Dinamyk Pesquisa E. Desenvolvimento Tecnologico S/C Ltda. Tecnologia de Solucoes, Sao Paulo, Brazil

Filed Jun. 11, 1979, Ser. No. 47,117
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—68 **1 Claim**



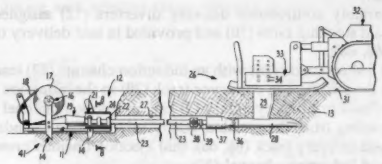
1. In a roadway structure formed of concrete slabs interconnected by a joint formed between a pair of opposed walls of said slabs, said walls defining therebetween a gap which is bridged by said joint, the improvement comprising shoulder portions defining at least the upper adjacent edges of said opposed walls of said slabs, said shoulder portions consisting essentially of cured silica-epoxy mortar built into said walls by compacting said silica-epoxy mortar into previously prepared sockets formed in said walls to provide structurally bonded reinforcement at such shoulder portions, and resilient joint means interposed between said opposed walls and extending in adhesive bonding engagement at least along said silica-epoxy mortar shoulder portions, said resilient joint means comprising a sealing element consisting essentially of resilient material and formed to define cavity means internally thereof, and adhesive material applied between said sealing element and each of said opposed walls to effect an adhesive bond therebetween, said adhesive material being capable of setting after application thereof to effect said adhesive bond, a filler material introduced into said cavity means under pressure and rendered rigid after introduction into said cavity means, said sealing element being capable of undergoing flexure as a result of introduction into said cavity means of said pressurized filler material to maintain said adhesive pressed between said sealing element and said opposed walls during setting of said adhesive material, said filler material and said adhesive material being selected such that said adhesive material sets to form said adhesive bond in said joint prior to hardening of said filler material within said cavity means.

4,285,613

APPARATUS FOR FORMING AND INSTALLING UNDERGROUND DRAINPIPE

Kenichiro Takagishi, 4223-11, Dazaifu-cho, Chikashi-gun, Fukuoka-ken, and Yutaka Tsuda, 1260, Kokubu-cho, Kurumeshi, Fukuoka-ken, both of Japan

Filed Oct. 5, 1979, Ser. No. 82,305
Int. Cl.³ F16L *1/02*
U.S. Cl. 405—156 **14 Claims**



1. Apparatus for forming and installing underground drainpipe, comprising:

an elongated frame adapted for positioning in a depression in the soil;

means for anchoring said frame in place;

dispensing means on said frame formed for carrying a rolled web of semi-flexible sheet material;

curling means on said frame formed for receiving the web of sheet material from said dispensing means and for curling same to bring the side edges of the web into confronting relation;

pressor means on said frame formed for receiving the curled web from said curling means and pressing together the confronting side edges of said web;

ring means on said frame formed for receiving the web from said pressor means and forming same into a tube of substantially cylindrical cross-section;

a transparent shield overlying said ring means and pressor means and formed for preventing loose soil from falling into said ring and pressor means while permitting constant visual inspection;

and means for drawing said web from said dispensing means through said curling and pressor and ring means into a subterranean passage.

4,285,614

STRUCTURE ALLOWING THE ATTAINMENT OF A PRECISE SEABED LOCATION

Jacques E. Lamy, Fontenay-Aux-Roses, France, assignor to Compagnie Generale pour les Developpements, Paris, France

Filed Dec. 5, 1978, Ser. No. 966,552
Claims priority, application France, Dec. 5, 1977, 77 36508
Int. Cl.³ E02B *17/02*
U.S. Cl. 405—203 **3 Claims**

1. A process for a precise in situ seating of a buoyant rig upon a seabed bottom at an offshore location established by a seabed work template, comprising the steps of:

towing the buoyant rig afloat to a sea-surface position close to the offshore location;

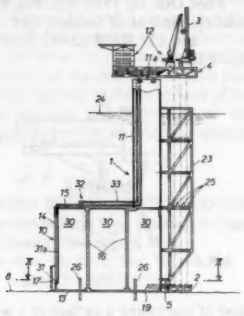
partially ballasting the buoyant rig for intermediate submergence thereof above the seabed bottom and down to a depth such that horizontally spaced notches defined by a plurality of protrusions at a periphery of a base section of the buoyant rig are at a level lower than tops of horizontally spaced piers driven into the seabed bottom adjacent to the seabed work template, whereby said spaced notches are in horizontal matching register with respective ones of said spaced piers;

horizontally displacing the buoyant rig, while in said intermediate submergence, for engagement of said spaced piers by said spaced notches respectively;

downwardly projecting piles from retracted positions towards the seabed bottom;

locking firmly said piles in such downwardly projecting position to preclude retraction thereof; and

further ballasting the rig for grounding said base section thereof on the seabed bottom, while said rig is vertically



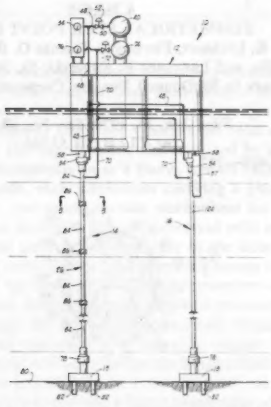
guided by the cooperative engagement of respective ones of said spaced notches with said spaced piers, and while said downwardly projecting piles are driven into the seabed bottom.

4,285,615

CORROSION RESISTANT TENSION LEG CABLES

Frederick J. Radd, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Dec. 13, 1978, Ser. No. 968,881
Int. Cl.³ B63E *35/44*; E02B *17/00*
U.S. Cl. 405—211 **20 Claims**



1. A mooring system apparatus for a structure floating on a body of water, comprising:

a corrosion resistant cable system, including:

a multi-strand cable, having voids between adjacent strands;

a fluid tight covering engaging an outer surface of said cable;

a means for supplying fluid under pressure directly to said voids; and

a fluid pressure monitoring means, for continuously monitoring said fluid pressure in said voids and determining when said fluid pressure in said voids changes;

a first connector means, connected to an upper end of said cable, for connecting said cable to said floating structure; and

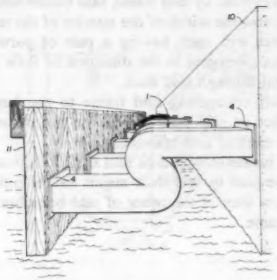
a second connector means, connected to a lower end of said cable, for connecting said cable to an anchor means attached to a floor of said body of water.

4,285,616

ROLL COMPRESSION MEMBER

Jonathan Evetts, 35 Tulip Ct., Burlingame, Calif. 94010

Filed Jul. 23, 1979, Ser. No. 59,850
Int. Cl.³ E025 *3/22*
U.S. Cl. 405—215 **6 Claims**



1. An elastomeric compression member for separating two surface members, comprising:

first and second parallel, transversely spaced apart elongate leg portions having outer and inner ends, said leg portions extending generally at right angles from said surface members with said outer ends abutting said surface members;

said leg portions spaced-apart by a distance Δ;

said leg portions having lengths L, a first dimension T taken parallel to said distance Δ and a second dimension W taken perpendicular to said first dimension T, said legth L being substantially greater than said first dimension T;

a generally S-shaped connecting portion coupling said inner ends of said leg portions;

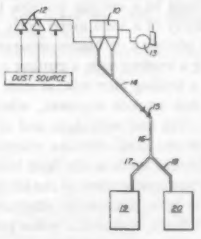
whereby when said surface members are brought together, said compression member compresses by rolling said leg portions around said connecting portion.

4,285,617

DUCT AND FLOP-GATE CONSTRUCTION AND METHOD OF HANDLING DUST OR OTHER PARTICULATE MATERIAL

Mark Gozion, 570 Richland Rd., Pittsburgh, Pa. 15228, and H. Mark Hall, 2453 Saddle Dr., Allison Park, Pa. 15101

Filed Dec. 26, 1979, Ser. No. 106,626
Int. Cl.³ B65G *53/56*
U.S. Cl. 406—171 **3 Claims**



1. In a system in which a dust-particulate mixture is filtered in a bag house, or the like, and the separated particulate material is conducted for discharge alternately to each one of a pair of receptacles, said system including duct means extending

between the discharge side of said bag house and said receptacles and containing a bifurcate portion having a pair of branches each of which is connected with the inlet to one of said receptacles, fan means for inducing an air flow through said duct means counter to the direction of particulate flow therethrough for partially evacuating said system, and means for directing particle flow alternately to the respective ones of said receptacles without disrupting the partial evacuation of air therefrom, comprising:

(a) a flop-gate having a frame, a plurality of mutually spaced baffles carried by said frame, said baffles being of a length to traverse the width of the interior of the respective duct branches and each having a pair of particle-deflecting surfaces divergent in the direction of flow of particulate material through said duct,

(b) a shaft connecting said frame to the juncture of said branches in said duct means for pivotal movement between each of said branches, and

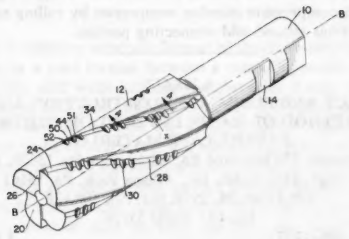
(c) plate means mounted on said shaft for pivotal movement with respect to said duct means and effective to restrict the flow area of the other of said branches traversed by said frame.

4,285,618

ROTARY MILLING CUTTER

Stephen E. Shanley, Jr., 9434 Lakewood, Grosse Ile, Mich. 48188

Filed Oct. 12, 1979, Ser. No. 84,073
Int. Cl.³ B26D *1/12*; B23B *51/00*
U.S. Cl. 407—54 **27 Claims**



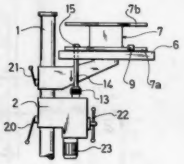
1. A milling cutter comprised of a generally cylindrical shank section joined to a cutting section, the cutting section consisting essentially of a hard metal body whose surface has formed into it a plurality of blades separated by flutes, each said blade having a leading side, a cutting edge on the leading side, a land, and a trailing face side; at least two of said blades having at least one smooth segment, wherein the land and cutting edge are even and unbroken, and at least one serrated segment, wherein the land consists essentially of a row of cutting teeth, adjacent teeth in the land being separated from each other by a transverse groove in the blade; said smooth and serrated segments being located in staggered positions from blade to blade, so that a diametrical plane perpendicular to the axis of the cutter and passing through any point along said axis of the cutting section will intersect at least one smooth cutting segment and one serrated cutting segment to thereby contact and work any point of a workpiece being cut with a smoothing and a serrated segment portion of cutting edge.

4,285,619

SURFACE MACHINING METHOD AND A MACHINE FOR PERFORMING THE METHOD

Filip Henningsson, Grästorp, Sweden, assignor to Frammestads Smides & Mek. Verkstad AB, Nossebro, Sweden

Filed Oct. 16, 1979, Ser. No. 85,209
Claims priority, application Sweden, Oct. 25, 1978, 7811071
Int. Cl.³ B23B *35/00, 39/00*
U.S. Cl. 408—1 R **4 Claims**



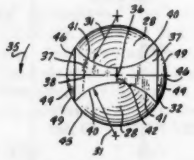
1. A method of machining a surface of a workpiece adjacent to the mouth of a passage in a workpice where said surface is not directly accessible from the driving component of a working machine, comprising the steps of providing a substantially horizontal working table with an opening therein, locating the workpiece upon said table with its non-accessible surface turned upwards and with the passage therein aligned with the opening in said table, introducing, from below, a spindle adapted to carry a cutter means and rotatable by said driving component through said opening and said passage, and machining the surface while maintaining a downwardly directed pressure upon the workpiece by the cutter of sufficient magnitude to hold said workpiece fixed in relation to said opening.

4,285,620

SYMMETRICAL SPUR POINT DRILL

William K. Luebbert, Florissant; Thomas O. Blankenship, Marthasville, and Lawrence F. Kuberski, St. Peters, all of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 14, 1979, Ser. No. 48,643
Int. Cl.³ B23B *51/04*
U.S. Cl. 408—212 **10 Claims**



1. A drill having a forward cutting end, comprising:

a cylindrical marginless drill body having two flutes symmetrical about the axis of the drill body which define two symmetrical lands, the cross section of said flutes, taken in the plane perpendicular to the axis of the drill body, are in the shape of semicircles cut from the periphery of the drill body;

four surfaces on the forward end of said drill body, said surfaces divided into two sets of surfaces symmetrical about the axis of the drill body, each said surface having a forward or cutting edge and a trailing edge which is relieved from said cutting edge, the first or inside two symmetrical surfaces adjacent the axis of the drill body comprising planes passing through the major diameter of the drill and disposed within the range of 30 to 40 degrees to the plane perpendicular to the axis of the drill body, said surfaces meeting at the minor diameter of the drill and

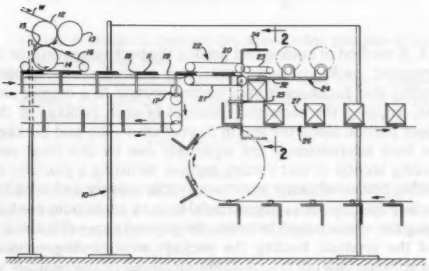
extending from the axis of the drill body radially to the line between the points where the flute radiuses meet the periphery of the drill, and the second two symmetrical faces comprising planes passing through said line between the points where the flute radiuses meet the periphery of the drill and disposed within the range of 40 to 50 degrees to the axis of the drill measured along the major diameter of the drill said first and second sets of planes intersecting along said line between the points where the flute radiuses meet the periphery of the drill, said second planes extending from said line radially to the periphery of the drill, said second faces defining two symmetrical spurs which contact the workpiece first in a drilling operation.

4,285,621

APPARATUS FOR STACKING PRODUCT

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Nov. 14, 1979, Ser. No. 93,994
Int. Cl.³ B65H *29/34*
U.S. Cl. 414—45 **10 Claims**



1. Apparatus for stacking web units including a frame, means on said frame for advancing product units along a horizontal path and then along a vertical path to a horizontally traveling receiving and takeaway conveyor wherein the units accumulated into stacks, the improvement characterized by a pair of transfer finger mechanisms on said frame, one on each side of said horizontal path, each mechanism carrying a plurality of L-shaped fingers, and means on said mechanisms for moving the fingers thereof through a generally obround orbit intersecting said horizontal path slightly inwardly of the sides thereof and defining said vertical path, said advancing means including first and second horizontally extending conveyors arranged sequentially in said horizontal path, said first conveyor being arranged to engage the central portion of said product units while said second conveyor is arranged to engage the side portions of said units and with the outside longitudinal edges of the first conveyor spaced from the inside longitudinal edges of the second conveyor to provide a finger engageable portion on each unit, said mechanisms being arranged relative to said first and second conveyors to orbit said fingers into supporting engagement with said finger engageable portions of certain of said product units.

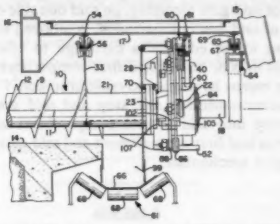
8. Apparatus for stacking web units including a frame, means on said frame for advancing product units along a horizontal path and then along a vertical path to a horizontally traveling receiving and takeaway conveyor wherein the units accumulated into stacks, the improvement characterized by a pair of transfer finger mechanisms on said frame, one on each side of said horizontal path, each mechanism carrying a plurality of L-shaped fingers, and means on said mechanisms for moving the fingers thereof through a generally obround orbit intersecting said horizontal path slightly inwardly of the sides thereof and defining said vertical path, said L-shaped fingers having a first part connected to said means and extending in the plane of said orbit and radially away therefrom, and a second part perpendicular to said first part and spaced from said means.

4,285,622

APPARATUS FOR FEEDING MATERIAL OUT OF SILOS OR FROM STACKS

Louis R. Allard, Ile Bizard, Canada, assignor to Beloit Corporation, Beloit, Wis.

Filed Aug. 6, 1979, Ser. No. 63,901
Int. Cl.³ B65G *65/46*
U.S. Cl. 414—133 **10 Claims**



1. In a traveling screw apparatus for removing material from a stored quantity of such material, the apparatus including a screw having a core and flights, means for rotatably supporting the screw at both the front and rear ends, support structure including a pair of support rails for carrying the weight of both ends of the screw, a motor for rotating the screw, means for moving the screw along the support rails transversely to the axis of screw rotation, wherein the improvement comprises:

the front and rear ends of the screw are rotatably mounted in corresponding front and rear trunnion carriages which permit the screw to skew relative to its traversing path of travel along the support rails, one of said trunnion carriages including a double trunnion arrangement which permits movement of its associated end of the screw substantially both horizontally and vertically whereby the screw can move both axially toward and away from the other trunnion carriage as well as skew in a horizontal plane;

the front and rear trunnion carriages are mounted on the support rails for travel therealong;

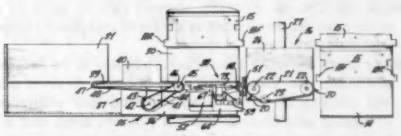
the means for moving the screw include a traversing motor mounted to each trunnion carriage which engages the support structure and powers the trunnion carriages upon the corresponding support rail, said motors being independently operable to control the alignment of the screw relative to its direction of travel.

4,285,623

COMBINED TRANSPORT AND GATE ASSEMBLY FOR DOCUMENT STORAGE AND RETRIEVAL SYSTEMS

Edwin V. Stephens, Los Alamitos, Calif., assignor to Infodetics Corporation, Anaheim, Calif.

Filed Mar. 17, 1980, Ser. No. 131,076
Int. Cl.³ B65G *1/02*
U.S. Cl. 414—278 **16 Claims**



1. In a document storage system of the type including a storage rack having a plurality of individual storage compart-

ments, each of said compartments normally having positioned therein a cartridge holding a plurality of cards or the like, at least a first one of said compartments being empty and functioning as an access port for feeding cartridges into and removing cartridges from said storage rack, and a carriage assembly which travels on one side of said rack for transferring cartridges between said access port and the other storage compartments, said carriage assembly including a transport mechanism for moving cartridges thereon to and thereoff of, an improved gate assembly positionable in a second empty storage compartment immediately below said first compartment comprising:

a mechanical stop extending upwardly from the leading edge of said gate assembly, on said one side of said rack, in front of said first compartment, positioned to intercept the leading lower edge of a cartridge to block movement thereof into or out of said first compartment;

actuator means having a movable arm; and

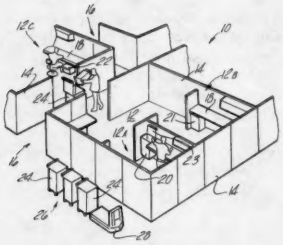
means interconnecting said stop and said arm for moving said stop into said second compartment to clear a cartridge in said first compartment and said carriage assembly transport mechanism.

4,285,624

TRASH COLLECTION AND MANAGEMENT SYSTEM FOR AN OFFICE ENVIRONMENT

Robert L. Propst, and Paul L. Propst, both of Ann Arbor, Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Apr. 9, 1979, Ser. No. 28,256
Int. Cl.³ B65G *67/40*; B65D *43/16*; B60D *1/14*
U.S. Cl. 414—362 **5 Claims**



1. A trash collection, transport, and management system for an office environment that includes upright walls, walkways between said walls, and furniture such as desks positioned against said walls, said system comprising

a plurality of trash receptacles of substantially desk top height for receiving trash generated in said environment, storing said trash and transporting the trash to a remote dump site,

each of said receptacles having an open upper end, a bottom wall, a front wall, a back wall, a pair of side walls, a cover movably supported on said back wall for pivotal movement between an upright open position adjacent one of said office walls and a closed position overlying said open upper end, a pair of casters secured to said bottom wall at one end thereof and a pair of fixed position wheels secured to said bottom wall at the opposite end thereof,

means operable to pivotally connect two or more of said receptacles for movement as a train of receptacles through said walkways, and

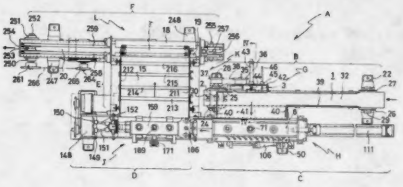
one or more dumping mechanisms adapted to be located at said dump site, each of which is operable to pivot one of said receptacles about a single fixed and substantially horizontal axis from an upright position upon said walkway to an elevated and substantially inverted position over said dump site wherein said cover is moved to a substantially open position, said axis being located above said upper end of said one receptacle in said upright position therof upon the walkway and spaced horizontally therefrom in a direction toward said dump site.

4,285,625

METHOD AND APPARATUS FOR CUTTING AND PEELING THE PACKAGING MATERIAL OF AN ELONGATED PACKAGE CONTAINING A PRODUCT

Morio Yamada, Yokohama, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,924
Claims priority, application Japan, Dec. 17, 1977, 52-151220
Int. Cl.³ B65B *65/09, 17/00*
U.S. Cl. 414—412 **11 Claims**



1. A method of cutting and peeling the packaging material of elongated packages each containing a product comprising feeding said packages from a feeding section to a cutting section, gripping the packaging material of each package at the upper portion along the length thereof after each said package has been intermittently fed separately one by one from said feeding section to said cutting section, thrusting a plurality of cutting blades of cutter members synchronously and simultaneously into the packaging material to cut a continuous cut line along the whole length between the gripped upper side thereof and the product, feeding the package to a peeling section, forcedly peeling off the packaging material of the package at such peeling section, delivering the peeled and thus exposed product to a delaying section in which the product received from the peeling section is shifted stepwise and successively in dead weight fashion to be delayed and stored therein, feeding said product intermittently from said delaying section to a delivering and discharging section which regularly delivers and discharges in one or more lines the products received intermittently from said delaying section to thereby form a continuous process line.

4,285,626

FORK LIFT TRUCK WITH PLATE GLASS HANDLING ATTACHMENT

Guido A. Donato, Wayne, Pa., assignor to Drexel Industries, Inc., Horsham, Pa.

Filed Mar. 24, 1980, Ser. No. 133,439
Int. Cl.³ B66F *9/24, 9/18*
U.S. Cl. 414—622 **2 Claims**

1. A fork lift truck having a truck drive-control circuit, a parking-brake control circuit, an elevatable mast-control circuit, and plate glass handling means, said plate glass handling means and control circuitry including:

a. a plate glass handling fixture supported on said mast;

b. said fixture having means at its upper and lower ends for capturing the upper and lower edge portions of a plate glass load;

c. said upper capture means being movable pivotally between open and closed positions;

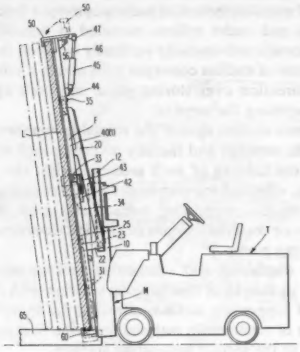
d. spring-loaded feeler means supported on said fixture and adapted to be actuated by a plate glass load;

e. switch means responsive to actuation of said feeler means for opening said drive-control circuit to disable said drive and for completing said parking-brake control circuit to apply said parking brake;

f. means, operable after said fixture has been raised suffi-

ciently to capture the lower edge portion of a plate glass load, for closing said drive-control circuit to reestablish said drive;

g. means for moving said pivotal upper capture means to



closed position to capture the upper edge portion of said plate glass load; and

h. means, responsive to the closing of said upper capture means, for opening said brake-control circuit to release said parking brake.

4,285,627

UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLE

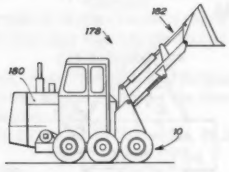
Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Incorporated, Dallas, Tex.

Continuation of Ser. No. 971,710, Dec. 21, 1978, which is a division of Ser. No. 799,328, May 23, 1977, abandoned. This application Jan. 31, 1980, Ser. No. 117,350

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ B62D *21/00*

U.S. Cl. 414—695.5 **10 Claims**



1. A loader mechanism including:

(a) an undercarriage assembly comprising:

an elongate hollow load-bearing undercarriage frame;

at least three axle members each having a wheel receiving member at one end thereof;

at least three wheel members each mounted on and secured to a wheel receiving end of an axle member outside said frame;

means rotatably supporting the axle members at longitudinally spaced points along the undercarriage frame with each of the axle members extending out of the undercarriage frame and being rotatably supported in at least one side of said undercarriage frame;

the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members to facilitate skid steering of the mechanism;

transmission means positioned within the undercarriage frame for drivingly interconnecting at least two of the axle members; and

drive means operably connected to the transmission means for actuation thereof whereby the drive means and the transmission means cause concurrent rotation of the interconnected axle members;

(b) arm means;

(c) means connected to the undercarriage assembly for supporting one end of the arm means for pivotal movement about an axis;

(d) a bucket mounted at the opposite end of the arm means for receiving, lifting and carrying materials therein;

(e) fluid cylinder means for selective actuation to extend and retract the arm means and the bucket;

(f) an operator's compartment; and

(g) an engine for powering the undercarriage assembly and the fluid cylinder means.

4,285,628

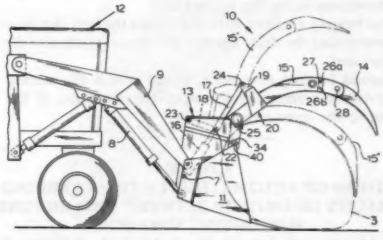
GRAPPLE SYSTEM

Edward M. Jankowski, Sioux Falls, S. Dak., assignor to Du-Al Manufacturing Company, Division of Core Industries, Inc., Sioux Falls, S. Dak.

Filed Sep. 27, 1979, Ser. No. 79,508

Int. Cl.³ B66C *1/00*

U.S. Cl. 414—739 **13 Claims**



1. A grapple system for mounting on a tractor bucket, comprising:

(a) a grapple tooth frame including a plurality of grapple teeth extending in fork-like fashion from a hinge means for swinging movement of the grapple tooth frame and a crank arm connected to the frame;

(b) a grapple linkage housing connected to the grapple tooth frame by the hinge means;

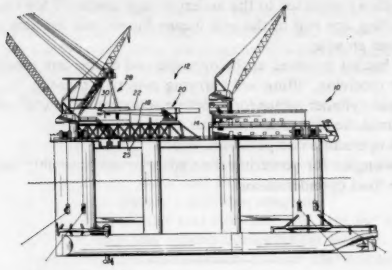
(c) the linkage housing having mounted thereon first and second pivotally series connected linkages and a hydraulic driving member having one end pivotally connected at the pivotal junction between the first and second linkages and its other end pivotally connected at a first point to the linkage housing, the free end of the first linkage pivotally connecting to the crank arm and the free end of the second linkage pivotally connecting to the linkage housing at a second point, the first and second points and relative lengths of the first and second linkages and hydraulic driving member being chosen such that with the grapple tooth frame in an open position the hydraulic driving member and first linkage are approximately in line and with the tooth frame in a closed load engagement position the first and second linkages are approaching an in-line configuration.

4,285,629

FIRE FIGHTING BOOM ASSEMBLY FOR SERVICE VESSEL

Thomas L. Elliston, 6000 E. Berry, Fort Worth, Tex. 76119

Filed May 18, 1978, Ser. No. 907,046
Int. Cl.³ B66C *1/42*
U.S. Cl. 414—740 **8 Claims**



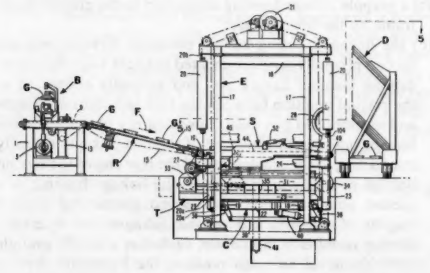
1. A utility claw assembly comprising, in combination:
a support arm having an elongated shank, a fixed arcuate jaw projecting from one end of the shank, a first slot extending axially through the shank, and a second slot extending along a curved path through the fixed jaw;
a moveable arcuate jaw having a lever portion pivotally mounted to the support arm;
a draw bar disposed on one side of the shank for axial movement along the first slot;
a link bar disposed on the opposite side of the shank, the link bar having a first end portion disposed for movement along the first slot and a second end portion disposed for movement along the second slot;
a first bearing element disposed within the first slot pivotally connecting the draw bar to the first end portion of the link bar; and,
a second bearing element disposed within the second slot pivotally connecting the second end portion of the link bar to the lever arm.

4,285,630

METHOD OF AUTOMATICALLY TRANSFERRING A PLURALITY OF OBJECTS BETWEEN TWO DIFFERENT SUPPORTING SURFACES

Silvio Manini, and Antonio Pacciarini, both of Milan, Italy, assignors to Industrie Pirelli, S.p.A, Milan, Italy

Continuation of Ser. No. 825,828, Aug. 18, 1977, which is a division of Ser. No. 577,459, May 14, 1975, Pat. No. 4,062,458. This application Sep. 25, 1979, Ser. No. 78,787
Claims priority, application Italy, Jun. 28, 1974, 24491 A/74
Int. Cl.³ B65G *3/00*
U.S. Cl. 414—786 **2 Claims**



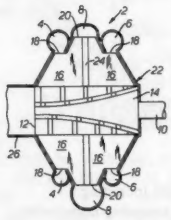
1. A method for transferring a plurality of sections of elastomeric material on an apparatus having a storing plane, a rotatable member, a substantially planar first supporting surface defined by the upper run of a first system of endless conveyor belts mounted at laterally spaced intervals, the upper run of said first system being movable in a first substantially straight direction parallel thereto towards the storing plane, and a substantially planar second supporting surface defined by the upper run of a second system of endless conveyor belts running around inlet and outlet rollers, mounted at laterally spaced intervals, movable substantially vertically between the belts of the first system of endless conveyor belts and in a substantially horizontal direction over storing plane and back again, said method comprising the steps of:
holding each section against the rotatable members;
rotating the member and thereby inverting each section;
releasing the holding of each section against the rotatable member, effecting transfer to the first supporting surface;
moving the first supporting surface and each section of elastomeric material thereon in said first direction towards the storing plane;
vertically displacing said substantially planar second supporting surface to an overhanging position with respect to the first supporting surface, effecting the transfer of the sections of elastomeric material from the first supporting surface to the second supporting surface;
displacing said second system including the second supporting surface and each section thereon in a substantially horizontal direction over the storing plane;
stopping said sections in a position fixed with respect to said storing plane and above it; and
horizontally displacing the roller located at the outlet end of the second system relative to and toward the roller located at the inlet end of the second system, whereby the sections are no longer supported and fall on the underlying storing plane.

4,285,631

RADIAL FLOW CENTRIFUGAL IMPELLER

Peter J. Taylor, Fareham, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Oct. 24, 1979, Ser. No. 87,770
Claims priority, application United Kingdom, Nov. 20, 1978, 45184/78
Int. Cl.³ F01D *1/06*
U.S. Cl. 415—143 **3 Claims**



1. A radial flow centrifugal impeller comprising an even number of re-heat flow ports, a main engine flow port, and a drive shaft having a helical impeller arrangement provided on its circumference and impeller blades mounted on the circumference of the helical impeller arrangement, each impeller blade having a flat peripheral first portion adjacent each re-heat flow port and a flat peripheral second portion adjacent the main engine flow port, the ratio of the size of the first portions on all the impeller blades to the size of the second portions on all the impeller blades being effective to control the ratio of the fuel flowing through the re-heat flow ports and the main engine flow port, and the re-heat flow ports being symmetrically disposed about the radial flow centrifugal impeller.

4,285,632

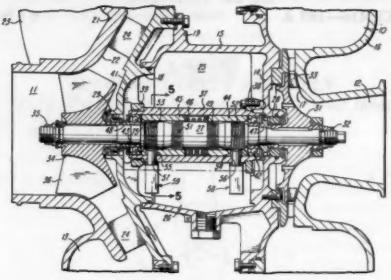
OILING SYSTEM FOR ROTOR BEARINGS

Dennis W. DeSalve, Findlay, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Feb. 28, 1979, Ser. No. 16,112

Int. Cl.³ F01D *25/18*; F04D *29/06*; F01M *9/00*

U.S. Cl. 415—175 **8 Claims**



1. In a rotor assembly, a housing providing an oil sump, a cartridge substantially bridging said sump, a rotor shaft rotatable in said cartridge and having integral screw threads thereon forming a pump means, flow passage means defining a capillary means for lifting oil from said sump to said shaft to prime said pump means, other flow passage means defining an oil feed means through which a full flow of oil is lifted to said shaft by operation of a primed pump means, said capillary means and said oil feed means being part of a unitary assembly extending through said cartridge to an adjacent relation to said pump means on said shaft, said unitary assembly being so positioned relative to said shaft as to create therewith a critical gap across which oil moves directly from said assembly on to the screw threads on said shaft, the width of said gap being selected to compensate for shear effects associated with shaft operation at relatively high oil temperatures, and shaft bearing means to and through which oil flows along said shaft in response to operation of said pump means.

4,285,633

BROAD SPECTRUM VIBRATION DAMPER ASSEMBLY FIXED STATOR VANES OF AXIAL FLOW COMPRESSOR

Carmen B. Jones, West Chester, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 26, 1979, Ser. No. 88,503

Int. Cl.³ F03B *3/18*

U.S. Cl. 415—191 **6 Claims**

1. A broad spectrum vibrations damper assembly for use in a gas turbine engine having an axial flow compressor with a plurality of stator airfoil vanes disposed circumferentially in an annular row, with each vane having an outer end and an inner end, and with said outer end of each vane affixed to a common sectored outer shroud, wherein air flows into and through said compressor, comprising:

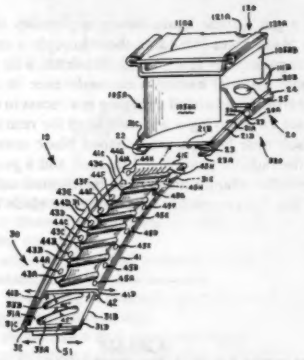
a. a common sectored inner shroud, with each sector divided into a plurality of similar constituents segments, wherein each inner shroud segment has an outer surface, an inner surface, a leading edge, and a trailing edge with said inner end of at least one vane affixed to said outer surface of said inner shroud segment, and with said loading edge of each said segment curved below said inner surface of said segment and also curved toward said trailing edge of said segment, thereby forming and defining a leading edge channel for each segment;

b. a channel member affixed to said inner surface of each said inner shroud segment at said trailing edge therof, with each said channel similar to, and facing, said leading edge channel of its respective inner shroud segment, whereby said channel member channel constitutes a trailing edge channel of said inner shroud segment;

c. and, a damper and seal subassembly, one such subassembly for each sector of said inner shroud, with each such subassembly fitted into, and frictionally engaged with, said leading edge channel and said trailing edge channel of said segments of a different one of said sectors of said inner shroud, wherein each said subassembly includes:

(1) a metal seal strip member of the same length as its respective inner shroud sector, and having an outer surface, and inner surface, a leading edge, a trailing edge, and a first end, with said leading edge curved above said outer surface and toward said trailing edge, thereby forming and defining a leading edge channel that is sized smaller than, and is complementary to, said leading edge channel of said constituent segments of its respective inner shroud sector, and with said outer surface having a plurality of equally spaced, rectangular-like shaped, identical indentations therein

(2) a metal damper and spring member having an outer surface, an inner surface, a leading edge, a trailing edge, and a first end, with said trailing edge curved under said inner surface and toward said leading edge, thereby forming and defining a trailing edge channel that is



sized smaller than, and is complementary to, said trailing edge channel of said constituent segments of its respective inner shroud sector, and is fitted over said trailing edge of said seal strip member, and with said outer and inner surfaces of this damper and spring member having a common plurality of equally spaced, identical, sine-wave-like corrugations therein complementary to, and fitted on, said seal strip member and its plurality of indentations, and also with said outer and inner surfaces of this damper and spring member having a first plurality of aligned perforations therein adjacent to and aft of said leading edge of said damper and spring member, and also having a second plurality of aligned perforations therein adjacent to and fore of said trailing edge of said damper and spring member, and further with a portion of said leading edge and a portion of said trailing edge of said damper and spring member removed from and at said first end, with said first end bent over, and in contact with, said first end of said seal strip member;

(3) and, a seal matrix member, made of cellular material, affixed to said inner surface of said seal strip member between said leading edge and said trailing edge thereof, and disposed between said leading edge channel and said trailing edge channel of said constituent segments of its respective inner shroud sector.

4,285,634

COMPOSITE CERAMIC GAS TURBINE BLADE

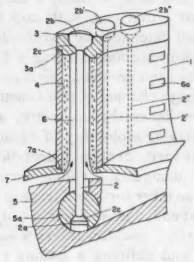
Axel Rossman, Karlsfeld; Wilhelm Hoffmüller, Munich, and Wolfgang Krüger, Priel, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,062

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834864

Int. Cl.[3] F01D *5/18*

U.S. Cl. 416—97 A 8 Claims



1. In a gas turbine blade having a plurality of supporting metallic blade cores extending therethrough; a ceramic airfoil enveloping the cores at a spacing therefrom; a tip plate formed of ceramic material having a circumference in conformance with the airfoil, said airfoil engaging in a recess in said tip plate, each blade core having a widened head for restraining the tip plate, each core being a wire-shaped blade core including a root at the radially inward end thereof; and a generally cylindrical metallic adaptor adapted to be inserted and locked in a turbine disc for commonly supporting the blade by each core root.

4,285,635

IMPELLER IN A CENTRIFUGAL BLOWER

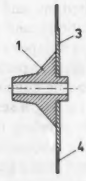
Seppo J. Leskinen, Västerskog, and Olli J. Pukkila, Helsinki, both of Finland, assignors to Oy Mercantile AB, Helsinki, Finland

Filed Jul. 27, 1979, Ser. No. 61,302

Claims priority, application Finland, Aug. 23, 1978, 782579

Int. Cl.[3] F04D *29/26;* B21K *1/28*

U.S. Cl. 416—185 3 Claims



1. In a impeller for centrifugal blower including a back plate having a center part and a radial outer part whose material thickness is smaller than said center part, a method of forming said back plate comprising the steps of: forming said outer part from a plurality of ring segments; welding said ring segments to said center part; and welding said ring segments radially to each other such that said center part is subjected to compressive stress.

4,285,636

VERTICAL AXIS TYPE WIND POWER TURBINE

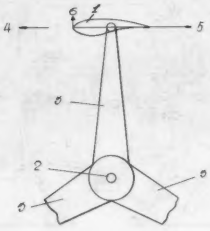
Yoshio Kato, Tokyo; Kazuichi Seki, Isehara, and Yoshio Shimizu, Kanagawa, all of Japan, assignors to Gakko Hojin Tokai University, Tokyo, Japan

Filed Feb. 17, 1978, Ser. No. 878,769

Claims priority, application Japan, Feb. 19, 1977, 52/17525; Feb. 19, 1977, 52/19704[U]

Int. Cl.[3] F03D *3/06*

U.S. Cl. 416—197 A 6 Claims



1. A vertical axis type wind powered turbine comprising a plurality of vertical blades of an airfoil form, each of said blades comprising a leading edge, a trailing edge, a cord line extending between said leading and said trailing edge and a mean camber line reversing position provided on said chord line between said leading and trailing edges, each of said blades further having a mean camber line having a radially inward curved convex curvature between said position and said leading edge and a mean camber line having a radially outward convex curvature between said position and said trailing edge and a rational thickness distribution is given to said mean camber line.

4,285,637

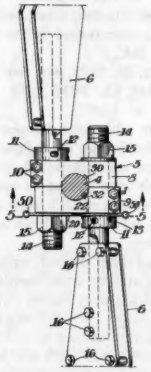
PROPELLER ASSEMBLY

Richard R. Thompson, 336 Fitzwater St., Philadelphia, Pa. 19147

Filed Apr. 5, 1979, Ser. No. 27,483

Int. Cl.[3] B64C *11/06;* F04D *29/36*

U.S. Cl. 416—202 17 Claims



1. A propeller or fan assembly comprising a hub slideably positionable on an axial drive shaft and two propeller blades with root shafts passing therethrough, tangential to said drive shaft and parallel each other with their blades deployed oppositely, said hub being axially or horizontally split to permit

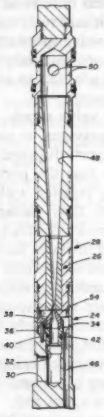
removal of entire propeller assembly without disturbing outboard shaft bearings, said blade shafts being rotatively and longitudinally adjustable within the hub such that pitch and length may be equally set for both blades, and clamped in their respective outboard hub half and secured against their respective constraining inboard hub half by a positive retention means such as a large nut threaded to their free end such that said blade shafts serve the multiple functions of blade main structure, position adjustment mechanism, hub structure, main clamps and blade retention means.

4,285,638

JET PUMP NOZZLE ASSEMBLY

Kenneth M. Clark, Tulsa, Okla., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 6, 1979, Ser. No. 55,922
Int. Cl.³ F04F *5/46*
U.S. Cl. 417—172 **4 Claims**



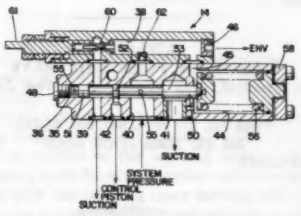
1. An improved jet pump, comprising:
a pump body having a longitudinal passage means therein to receive fluid to be pumped;
a venturi assembly mounted within said pump body including a venturi body placed in a pump fluid flow path to receive in the inlet thereof fluid to be pumped and power fluid, said venturi assembly being operably connected in fluid communication with an outlet from said pump body; and
a nozzle assembly within the pump body including a nozzle shell mounting means in said pump body, a hollow nozzle shell having one end portion mounted in said shell mounting means and having an outlet opening positioned near the inlet of said venturi body, and a tubular nozzle tip mounted within said nozzle shell outlet opening and extending therefrom,
said nozzle tip being secured to said nozzle shell by a bonding material interposed between said nozzle tip and said nozzle shell, said nozzle mounting means including an opening in said pump body to receive and mount one end of said nozzle shell and an abutting surface around an end of said mounting means to support a surface of said nozzle shell; and
said nozzle nozzle-and shell having a tubular end portion mounted in said nozzle shell mounting means opening and an outwardly extending flange having said surface on one side thereof in contact with said mounting means abutting surface;
(a) said nozzle tip being constructed of a corrosion and abrasion resistant solderable material that has a brittle nature;
(b) said nozzle shell being constructed of a solderable metal material that has a resilient nature; and
(c) said bonding material having a resilient nature and joining both said nozzle shell and said nozzle tip in order to form a fluid tight seal therebetween and to compensate for deformation of said nozzle shell when it is mounted in a nozzle housing thereby preventing possible damage to said nozzle tip by isolating said nozzle tip from deformation of said nozzle shell that may occur upon mounting of said nozzle shell within a pump housing.

4,285,639

ELECTRONIC CONTROL FOR VARIABLE DISPLACEMENT PUMPS

Richard H. Woodring, Plainwell; Paul K. Houtman, Kalamazoo; Thomas A. Kowalski, Paw Paw, and Charles H. Whitmore, Plainwell, all of Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Jun. 12, 1979, Ser. No. 47,853
Int. Cl.³ B64C *11/04*; B63H *5/00*
U.S. Cl. 417—218 **30 Claims**



27. A pump, comprising
flow generating means,
fluid motor means for changing the flow rate of said flow generating means,
means for adjusting the fluid pressure supplied to said fluid motor means, and
means for generating a control signal for controlling said adjusting means, comprising
means for producing a first command signal,
means for producing a second command signal,
means indicative of the position of said fluid motor means for producing a feedback signal,
means responsive to said first command signal and said feedback signal for producing a first combined signal,
means responsive to said first combined signal and said second command signal for producing a second combined signal, and
means responsive to said first and second combined signals for producing said control signal.

4,285,640

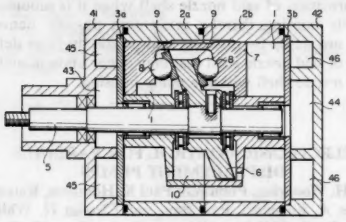
SWASH PLATE TYPE COMPRESSOR

Takamitu Mukai, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jul. 25, 1979, Ser. No. 60,462
Claims priority, application Japan, Aug. 3, 1978, 53-94931; Mar. 26, 1979, 54-35789
Int. Cl.³ F04B *1/18*; F16C *17/06*
U.S. Cl. 417—269 **5 Claims**

1. A swash plate type compressor comprising: a cylinder block having therein at least one cylinder bore; a compressor piston reciprocally fitted in said cylinder bore for effecting compression of a refrigerant; a drive shaft axially passing through said cylinder block and rotatably supported by bearing means; a swash plate secured onto said drive shaft rotated by said drive shaft thereby causing a reciprocal motion of said piston, and an operative engagement means for establishing an

operative engagement between said swash plate and said compressor piston, said operative engagement being formed with a flattened face slidably contacting said swash plate, wherein said swash plate is made of a high silica aluminum alloy, and



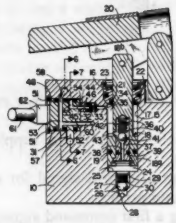
wherein said operative engagement means is made of a carbon steel material, and wherein said flattened face of said operative engagement means comprises a boron diffused steel layer formed in said carbon steel material of said operative engagement means.

4,285,641

HYDRAULIC PUMP AND VALVE

Randall L. Brimhall, 6918 Rhonda Ave., West Jordan, Utah 84084

Filed Jul. 27, 1979, Ser. No. 61,482
Int. Cl.³ F04B *21/00, 39/00*
U.S. Cl. 417—442 **5 Claims**



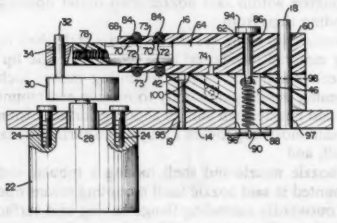
1. A hydraulic pump and valve unit comprising
a unitary block having a hydraulic fluid reservoir appended to one side of the block;
a first cylindrical bore drilled into said block extending inwardly from one end wall thereof;
a first flow passage bored into said block from said hydraulic fluid reservoir, said first flow passage communicating from the inner end of said first cylindrical bore to said hydraulic fluid reservoir;
a pump piston adapted for reciprocal movement in said first cylindrical bore so as to form a pump chamber between the piston and the inner end of said first cylindrical bore;
means for moving said piston in its reciprocal movement;
first check valve means which allows hydraulic fluid to flow from the reservoir to the pump chamber but substantially prevents backflow of the hydraulic fluid from the pump chamber to the reservoir;
a second cylindrical bore drilled into said block extending inwardly from a second end wall so as to be generally perpendicular to said first cylindrical bore, with the inner end of the second cylindrical bore being milled so as to be flat;
a third cylindrical bore drilled into said block extending from the flat, milled, inner end of said second cylindrical bore toward the first cylindrical bore, said third cylindrical bore having a diameter no greater than one-half the diameter of the second cylindrical bore, with the cylindrical axis of said third cylindrical bore being offset from the cylindrical axis of said second cylindrical bore;
a second flow passage bored inwardly from the inner end of said third cylindrical bore so as to connect said third cylindrical bore with said first cylindrical bore;
a third flow passage associated with said piston and adapted to connect said second flow passage to said pump chamber;
second check valve means which allows hydraulic fluid to flow from said pump chamber through said third flow passage to said second flow passage, but substantially prevents backflow of the hydraulic fluid from said second flow passage to said pump chamber;
a cylindrical thrust seal having a substantially axial borehole extending therethrough and being slidably mounted in said third cylindrical bore, said seal including sealing means between the outer cylindrical wall of the thrust seal and the cylindrical wall of said third cylindrical bore;
a fourth flow passage bored inwardly from the inner end of said second cylindrical bore so as to connect said second cylindrical bore with said reservoir;
a cylindrically-shaped valve spool rotatably mounted in said second cylindrical bore, said valve spool having an essentially flat inner end adapted to abut the flat end of said second cylindrical bore;
means for rotating the valve spool;
fifth and sixth flow passages in said valve spool having mutually respective ports disposed on the flat, inner end of said valve spool so that the ports can be brought into mutually alternating register with said third cylindrical bore and said fourth flow passage, respectively, in the inner end of said second cylindrical opening by rotation of said valve spool, said fifth and sixth flow passages extending through said valve spool from said ports in the end of the valve spool to mutually respective openings in the cylindrical side of said valve spool, so that said fifth and sixth flow passages extend solely between the cylindrical side and the inner, flat end of said valve spool, with the outer end of the valve spool being externally open to the exterior of the unitary block and connected to the means for rotating the valve spool and;
seventh and eighth flow passages bored inwardly from the side of said block so as to have respective spaced openings into said second cylindrical bore which are adapted to register with the respective openings in said valve spool, said seventh and eighth flow passages being adapted to direct the outflow and return of hydraulic fluid from and to the pump and valve unit.

4,285,642

PUMP PISTON CYLINDER ASSEMBLY WITH EXTERIOR RING SEALS

Walter D. Komhyr, 70 Manhattan Dr., Boulder, Colo. 80303

Filed Sep. 11, 1979, Ser. No. 74,560
Int. Cl.³ F04B *21/08*
U.S. Cl. 417—465 **22 Claims**



13. A pump assembly comprising:
a support member;
a base member mounted on said support member;

a cylinder block pivotally mounted on said base member and having a piston-receiving chamber therein, said piston-receiving chamber having a longitudinal axis aligned with the point of pivotal mounting of said cylinder block and said base member, and a fluid port communicating with said piston-receiving chamber, said fluid port having an externally opening mouth, said base member having an inlet passageway and an outlet passageway with an inlet port and an outlet port respectively disposed in closely spaced-apart relation symmetrically about a line through said point of pivotal mounting and the midpoint between said inlet and outlet ports;

biasing means for biasing said cylinder block and said base member into abutment;

a rotatable eccentric member mounted on said support member proximate one end of said cylinder block,

a piston having a portion at a first end thereof positioned in said piston-receiving chamber and connected at a second end thereof opposite said first end to said eccentric member, said piston-receiving chamber having a flexible sidewall portion of reduced thickness positioned adjacent to the surface of said piston and extending transversely of and in surrounding relation to said piston;

resilient compressing means in surrounding relation to said flexible sidewall portion for deforming said flexible sidewall portion uniformly into contact with the surface of said piston member; and

drive means for rotatably driving said eccentric member whereby said piston member is reciprocated in said piston-receiving chamber and said cylinder block is pivoted on said base member between points whereby said mouth of said fluid port is alternately positioned in communication with said inlet and outlet ports.

4,285,643

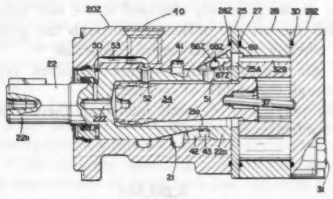
ROTARY FLUID PRESSURE DEVICE

Harvey C. White, 3733 Capilano Dr., West Lafayette, Ind. 47906

Continuation-in-part of Ser. No. 903,589, May 8, 1978, abandoned. This application Apr. 12, 1979, Ser. No. 29,019

Int. Cl.³ F04C *2/10, 15/02*

U.S. Cl. 418—61 B **14 Claims**



2. In a fluid pressure device having a housing, a drive shaft, a gerotor structure, a wobble stick drivedly connecting the drive shaft to the gerotor structure and fluid inlet and outlet means, the improvement of a wobble stick locating device comprising a rigid separate pin and said pin having its opposite ends engaging between the gerotor structure end of the wobble stock and the housing.

10. A gerotor pressure device including in combination a plurality of stationary valve passages, each of said valve passages comprising a pair of holes, one of said pair of holes being a through hole, the other of said pair of holes being a partial through bore and said pair of holes intersecting at an acute angle to increase the relative apparent cross section of either of said pair of holes and increase the volume of fluid able to flow through said holes.

4,285,644

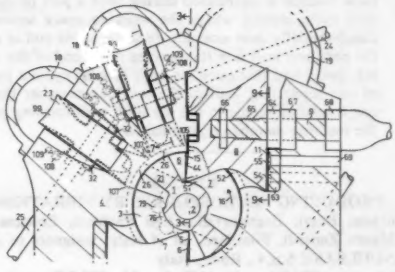
EXPANSION OR COMPRESSION MACHINE WITH INTERENGAGING MEMBERS ROTATING ON PERPENDICULAR AXES

Kauko A. Takalo, Kilontie 27 A 1, SF-02610 Espoo 61, Finland

Filed Feb. 15, 1979, Ser. No. 12,462

Int. Cl.³ F01C *3/02, 21/12*

U.S. Cl. 418—195 **8 Claims**



1. A machine for the expansion or compression of elastic fluids in closing spaces, the volumes of which vary periodically, comprising

a body structure defining at least one rotation space therein;

a working member rotatably mounted within said rotation space one portion of the working member facing the surrounding body forming, together with the surrounding body, at least one working space moving with the working member circumferentially, and another portion of the working member being provided with at least one separating wall extending close to the wall of the rotation space;

within one functional basic unit of the machine n rotating reaction members equally distributed around the periphery of the rotation space in such a way that each reacting member is rotatable around its own axis which is essentially perpendicular to the rotation axis of the working member and preferably situated totally outside the rotation space of the working member, the number of aforesaid working spaces situated one after another in circumferential direction being equal to the number of said reacting members or to an integral multiple thereof, and each reacting member extending partially into the rotation space of the working member and having a part, which forms a transversal partition wall dividing the working space in question into two parts, a process space and a transferring space, respectively, the volumes of which vary periodically according to rotation of the working member, said partition wall forming part being shaped to have one, at the most two transition sectors, in which the distance of the outer edge line to the rotation axis of the reacting member has a minimum value;

flow conduits in the body structure of the machine for the inlet and outlet of elastic fluid;

at least one first opening in the body part surrounding the rotation space on the process space side of the partition wall, for providing connection between the process space and the corresponding flow conduit;

at least one second opening positioned in said body part on the transferring space side of the partition wall for providing connection between the transferring space and the corresponding flow conduit;

a rotating valve member for periodical closing of the openings between the process space and the corresponding flow conduit, said valve member being mounted into the body of the machine in front of the opening in question, the rotation axis of the valve member being situated in a normal plane of the rotation axis of the working member, said normal plane being situated outside the normal plane

which includes the rotation axis of the reaction member and preferably in the vicinity of that side edge of the working space which constitutes the extreme end of the process space, and the plane of rotation of the valve member being at least approximately directed towards the rotation axis of the working member; and

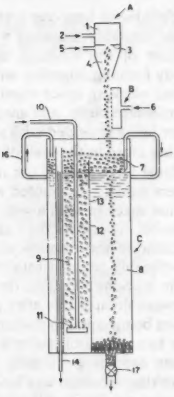
synchronizing means interconnecting said working member, reacting members and valve member so that the connection between the process space and the corresponding flow conduit is established during such a part of the process cycle, during which the working space moves circumferentially over a certain distance, at the end of which the partition wall is in the process space end of the working space, and that once for each process cycle a passage of one separating wall of the working member through one transition sector in the partition wall forming part of the reacting member is established.

4,285,645

PRODUCING MICROSPHERES BY VIBRATIONS

Giovanni Bezzi, Bagnacavallo; Ego Pauluzzi, Bologna, and Mauro Zanardi, Filattiera, all of Italy, assignors to AGIP NUCLEARE S.p.A., Rome, Italy

Filed Apr. 11, 1978, Ser. No. 895,365
Claims priority, application Italy, Apr. 15, 1977, 22498 A/77
Int. Cl.[3] B01J *2/06*
U.S. Cl. 425—6 **4 Claims**



1. In an apparatus for producing spheres from a solidifiable solution, comprising: a dropping header for receiving the solution, a disc having at least one dropping hole for forming droplets from the solution, and a collection vessel spaced from and below the dropping header having a reactive liquid therein through which the droplets from the header fall and become solid spheres, the improvement comprising:

means between the header and vessel connected to the header and having a chamber below each dropping hole through which the droplets fall,

means connected to said chamber means for supplying inert gas which contacts the droplets falling through said chamber to prevent pre-hardening thereof,

a reactive gas distributor between the header and vessel and below and parallel to the path of the droplets which fall from said chamber means for sending a stream of reactive gas onto the falling droplets for partially hardening such droplets before they fall into the collection vessel; and

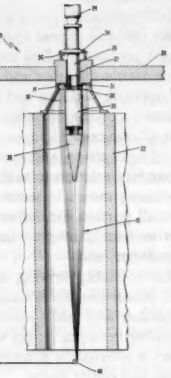
means connected to the vessel for providing and continuously renewing a dampening layer of foam on the reactive liquid in the vessel adapted to be penetrated by the partially hardened droplets while preventing deformation thereof as they fall and impinge upon the reactive liquid, including tube means in the vessel for removing foam at the foam/reactive liquid interface in the region where the partially hardened droplets first impinge upon the reactive liquid.

4,285,646

APPARATUS FOR QUENCHING MELT-SPUN FILAMENTS

Roland Waite, Matthews, N.C., assignor to Fiber Industries, Inc., New York, N.Y.

Filed May 13, 1980, Ser. No. 149,370
Int. Cl.[3] B29C *25/00*
U.S. Cl. 425—72 S **4 Claims**



1. Improved apparatus for the manufacture of melt-spun polymeric filaments, said apparatus being of the type wherein molten polymer is extruded downwardly through a filter pack and through an annular array of holes of a spinneret to form a circularly arranged group of filaments, quenching means for directing quenching gas across the filaments emerging from said spinneret, said quenching means comprising gas supply means, gas conduit means and gas discharge means, and a stationary or rotating guide therebelow at which all the filaments are gathered and redirected, said conduit means including gas discharge means disposed above said guide for discharging quench gas outwardly through the group of filaments, wherein the improvement comprises:

said gas supply conduit means extending downwardly through the middle of said pack,

whereby polymeric filaments melt-spun therefrom have reduced birefringence variability.

4,285,647

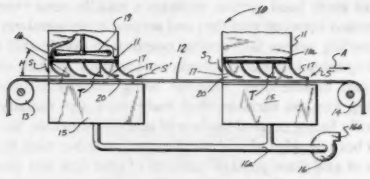
APPARATUS FOR THE MANUFACTURE OF FIBROUS WEBS

Cedric A. Dunkerly, II, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 31, 1979, Ser. No. 89,927
Int. Cl.[3] B29H *1/02*
U.S. Cl. 425—82.1 **11 Claims**

1. An apparatus for the manufacture of fiber webs, comprising: distributor means for dry fibers; a forming wire including a planar section disposed beneath said distributor means and linearly movable at a predetermined first velocity; suction box means disposed beneath said planar section of said forming wire and operative to draw air through said forming wire at a predetermined second velocity normal to said planar section; and means for imparting a horizontal velocity component less than said first velocity to said fibers in the direction of movement of said forming wire, wherein the fibers are caused to

impinge uopn the forming wire at an angle of from about 21 degrees to about 30 degrees, said second velocity is in excess of



about 250 feet per minute, and said first velocity is in excess of about 500 feet per minute.

4,285,648

APPARATUS FOR EXTRUDING A CROSS-LINKED MATERIAL

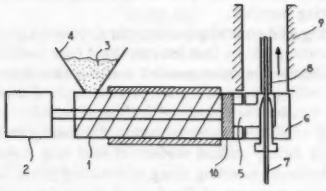
Robert Jocteur, Moret sur Loing, France, assignor to Societe Industrielle de Liaisons Electriques Silec, Paris, France

Division of Ser. No. 8,574, Feb. 1, 1979. This application Nov. 16, 1979, Ser. No. 94,929

Claims priority, application France, Feb. 2, 1978, 78 02942

Int. Cl.³ A01J *21/00*; A21C *3/00*

U.S. Cl. 425—97 **9 Claims**



1. An apparatus for continuously extruding a cross-linked insulating material, said apparatus comprising

an extrusion machine including a housing having an inlet and an outlet, extrusion means, an extrusion head positioned at the outlet end of said housing and a filtering means positioned adjacent said outlet end of said housing;

an injection means connected to said housing for injecting a cross-linking agent into a cross-linkable material within said housing between said filtering means and said extrusion head,

said apparatus further comprising cooling means provided between said filtering means and said injection means and controllably operable heating means, whereby the temperatures of the different operating zones of said apparatus may be respectively adjusted such that the cross-linkable insulating material and cross-linking agent are extruded together at an injectable, curable extrusion temperature.

4,285,649

PROTECTION SYSTEM FOR PART MOLDING MACHINES

Patrick B. Jonte, 1932 Perry Lake Rd., Ortonville, Mich. 48462, and John K. Biener, 8620 Waumegah Rd., Clarkston, Mich. 48016

Filed Nov. 19, 1979, Ser. No. 95,689

Int. Cl.³ B29F *1/14, 1/00*

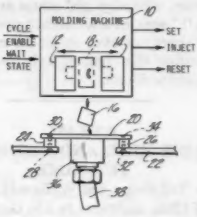
U.S. Cl. 425—137 **17 Claims**

1. A protection system for monitoring the operation of a part molding machine which ejects the part from the molds after successful completion of the molding process, said system comprising:

a plate for receiving the parts after they are ejected from the molds;

transducer means coupled to the plate, operative to provide a spectrum of signals having different frequencies and amplitudes upon detection of a part impacting said plate, the amplitude of said signals at particular frequencies depending upon the characteristics of the parts being made by the machine;

selector means for generating a selected frequency signal associated with the parts currently being made by the machine;



comparison means for comparing said selected frequency with the signals from the transducer means, operative to provide an output signal if the amplitude of the transducer signals at the selected frequency exceeds a predetermined level; and

control means for preventing further operation cycles of the machine if said output signal is not generated thereby protecting the molds from being damaged by a part which has not been fully ejected.

4,285,650

APPARATUS FOR PRODUCING TOBACCO PRODUCT FILTER RODS

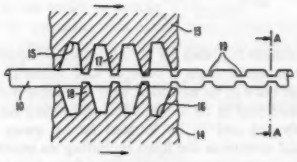
Paul A. Müller, Triesenberg, Liechtenstein, and Hans Muster, Greifensee, Switzerland, assignors to Celfil Company Establishment, Vaduz, Liechtenstein

Division of Ser. No. 844,389, Oct. 21, 1977, abandoned. This application Nov. 14, 1979, Ser. No. 94,157

Claims priority, application Switzerland, Aug. 11, 1977, 9888/77

Int. Cl.³ B31F *1/22*

U.S. Cl. 425—168 **13 Claims**



1. Cigarette filter production apparatus comprising:

apparatus for treating a web of fibrous material to increase its effectiveness as a filter for tobacco smoke and increase its resistance to lateral crushing when gathered transversely and enclosed in a wrapper to make a filter cord subdividable into filter rods and filter plugs for cigarettes, the web being provided with closely spaced longitudinal corrugations wherein the material has been laterally stretched to loosen and expose fibers, said treating apparatus comprising:

a pair of non-contacting rollers mounted for rotation at the same peripheral surface speed about spaced parallel axes with their peripheral surfaces in opposition and for adjustment of the distance between said surfaces to contact and compress and compact a corrugated web of the material

passed longitudinally through the nip between said rollers, at least one of the rollers of said pair being provided with ribs projecting from its periphery and extending generally parallel to its axis and forming a uniform design, the maximum separation between the tip of each of said ribs and the opposed surface of the other roller at the nip therebetween not exceeding about 0.2 mm, whereby the web is compressed and compacted in successive spaced narrow transverse zones to substantially eliminate the corrugations and produce a denser structure in said zones, the width of the tips of said ribs being not over about 0.4 mm and said tips being spaced circumferentially not over about 2.0 mm, whereby said zones are of a thickness not over about 0.2 mm, of a width not over about 0.4 mm and are spaced apart not over about 2.0 mm; and

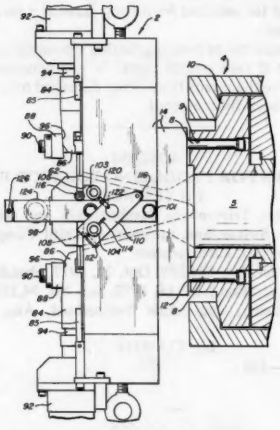
means for feeding the treated web to a tow machine for making cigarette filters.

4,285,651

EXTRUSION DIE HEAD AND METHOD OF MAKING THE SAME

David C. Fetchu, Tallmadge, and William H. Weidman, Independence, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Feb. 15, 1980, Ser. No. 121,942
Int. Cl.³ B29F 3/04
U.S. Cl. 425—192 R **13 Claims**



1. An extrusion die head for forming two elongated strips of elastomeric material from a core of said material emanating from a single bore in an extruder, said extrusion die head having an inboard end to be located facing toward said extruder and an outboard end to be located facing away from said extruder, said extrusion die head including an outer head section having a central opening extending from said inboard end to said outboard end, an inner head section located within said central opening and spaced from the walls of said central opening so as to define two separate passages for guiding the flow of said elastomeric material through said head, characterized in that:

(a) said outer head section includes a ring member having a central axis and extending from said inboard end to said outboard end of said extrusion die head, said ring member having a radially inwardly facing conical surface, said inwardly facing conical surface having a relatively small diameter at said inboard end of said extrusion die head and a relatively large diameter at said outboard end of said extrusion die head,

(b) said outer head section also includes first and second cone members each having on one side a radially outwardly facing conical surface mating with the radially inwardly facing conical surface of said ring member and on the opposite side a flow passage surface forming one of said walls of said central opening, and

(c) said inner head section includes a middle cone member disposed between said first and second cone members and extending across said central opening to divide said central opening into said two separate passages, the side edges of said middle cone member being radially outwardly facing conical surfaces that mate with the radially inwardly facing conical surface of said ring member, the top and bottom sides of said middle cone member each facing one of said flow passage surfaces of said first and second cone members forming therewith one of said passages for guiding the flow of said elastomeric material through said head, thereby forming said elastomeric material into a desired strip shape as said material passes from said inboard end to said outboard end of said extrusion die head.

12. A method of making an extrusion die head for forming two elongated strips of elastomeric material from a core of said material emanating from a single bore in an extruder, characterized by the steps of;

(a) fabricating a ring member and machining on said ring member a radially inwardly facing conical surface,

(b) fabricating a conical piece with an outboard end surface and an axially extending surface intersecting said outboard end surface, and machining said axially extending surface to form a radially outwardly facing conical surface that mates with said radially inwardly facing conical surface of said ring member,

(c) cutting said conical piece into three cone members along two cutting planes that intersect said base surface,

(d) machining the cone member surfaces that extend along said cutting planes to a configuration such that when said cone members are mounted with their radially outwardly facing conical surfaces engaging the mating radially inwardly facing conical surface of said ring member, the said surfaces extending along said cutting planes form two extrusion passages of the desired shape for guiding and forming said elongated strips of elastomeric material, and

(e) reassembling and mounting said cone members within said ring member with said radially outwardly facing conical surfaces of said cone members engaging said mating radially inwardly facing conical surface of said ring member and positioned so as to form said two extrusion passages of said desired shape.

4,285,652

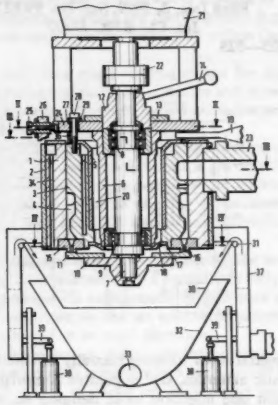
GRANULATING APPARATUS

Dietmar Anders, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, An der Breiten Wiese, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,762
Int. Cl.³ B29C 17/14
U.S. Cl. 425—311 **10 Claims**

1. Apparatus for granulating plastics melt and like materials, comprising a granulating head, a housing surrounding said granulating head, said housing including means for cooling and conveying away granulated material, a cutting plate on said granulating head, a rotatable cutter assembly, including a plurality of cutter blades cooperating with said cutting plate to granulate said materials, a rotatable cutter shaft on which said cutter assembly is mounted, drive means and bearing means for said shaft; said drive means, bearing means, shaft and cutter assembly being connected and operable as a unit, and mounting means for said unit including means providing a bearing surface adjacent said cutting plate such that said unit can be swivelled to adjust the cooperation of the blades of said cutter

assembly with said cutting plate whereby the distance between said blades and said cutting plate can be maintained at a desired



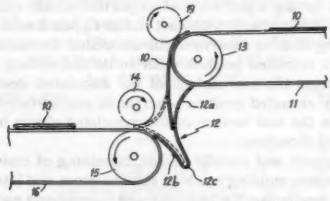
and constant spacing, and means operatively connected to said unit for effecting swivelling adjustment thereof.

4,285,653

APPARATUS FOR FOLDING FOOD ARTICLES IN SHEET FORM

Jean A. L. Bronnec, Brest, France, assignor to Etablissements Generaux de Mecanique de l'Ouest, Brest, France

Filed Jun. 26, 1979, Ser. No. 52,328
Claims priority, application France, Jul. 4, 1978, 78 19944
Int. Cl.³ A21C *11/00*
U.S. Cl. 425—324.1 **16 Claims**



1. Apparatus for folding crepes comprising:

(a) an upper conveyor belt and a lower conveyor belt, each of said belts having upper surfaces for transporting crepes, the upper conveyor belt having an end drum;

(b) a hollow casing positioned below the end drum of the upper belt to catch a crepe as it drops by gravity from the end drum, the hollow casing being configured to cause a crepe, dropped from the end drum of the upper conveyor belt to fold over on itself along a line perpendicular to the direction of its movement on the upper conveyor belt;

(c) a pair of vertically displaced, horizontally disposed feed rollers whose axes are perpendicular to the direction of movement of a crepe on the upper conveyor belt, the feed rollers being adjacent to casing and positioned so that their bite receives the folded edge of a crepe for feeding said crepe onto the upper surface of the lower conveyor belt;

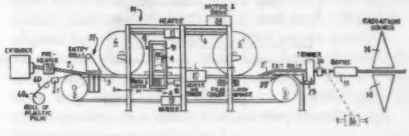
said hollow casing having a base located below the upper surface of the lower conveyor belt and positioned to engage the lowermost end of said crepe as said crepe drops from the end drum of the upper conveyor belt, and an anterior wall connected to the base and extending forwardly towards the bite between said feed rollers.

4,285,654

APPARATUS FOR CONTINUOUS TREAD PRODUCTION

George G. A. Bohm, Akron, Ohio, and Stanley S. Gross, Evans City, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 908,345, Jun. 12, 1978, Pat. No. 4,230,649.
This application Jan. 21, 1980, Ser. No. 114,094
Int. Cl.³ B29D *7/22*
U.S. Cl. 425—327 **18 Claims**



1. Apparatus for producing a continuous rubber strip molded with a surface design comprising:

1. means for extruding uncured rubber at a temperature below the curing temperature into a continuous moving rubber strip;

2. molding means for receiving and impressing a surface design on said strip comprising:

3. a first moving endless belt means, having block mold segments which during a portion of their travel butt together, for forming a continuous design pattern into which the strip is received;

4. a second moving endless belt means, having flat-plate segments which during a portion of their travel cooperatively move with said block mold segments for pressing the strip into the design pattern after it has been received in the block mold segments;

5. means for applying a high pressure of about 1000 psi to said strip while pressed in the block mold segments; said high pressure applying means comprising;

A. frame means for moving reciprocatingly along the path of travel of said first and second endless belt means within said molding means;

B. press means mounted on said frame means for engaging and urging successive flat-plate segments to press the strip into the design pattern during successive movements of the frame means in the direction of travel of sad first and second endless belt means;

6. means for maintaing a lower pressure on said strip after the imposition of said high pressure while said strip remains in the molding means;

7. means for releasing said maintaining means to remove all external pressure from the molded strip upon its moving out of the molding means; and

8. means for removing the molded strip from said block mold segments after moving out of the molding means.

4,285,655

COAT HANGER DIE

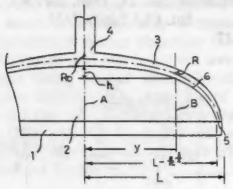
Yutaka Matsubara, Tokyo, Japan, assignor to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1979, Ser. No. 91,893
Claims priority, application Japan, Nov. 7, 1978, 53/136284
Int. Cl.³ B29F *3/04*; B29D *7/04*
U.S. Cl. 425—461 **7 Claims**

1. A coat hanger die comprising a coat hanger slit part, manifold part and manifold inlet part, wherein the manifold part is in the form of a coat hanger wherein the depth of the coat hanger slit part is defined by the following formula (2):

$$d = \left[Ro/m^{\frac{1}{3(n+1)}} \cdot \pi^{-\frac{1}{2}} \cdot \left(\frac{(3n+1)}{2(2n+1)} \right)^{\frac{n}{3(n+1)}} \cdot L^{\frac{1}{2}} \right]^{\frac{3}{2}} \quad (2)$$

in which Ro is the radius of a circle equivalent to the cross section of the manifold on the center line of the die, n is the flow behavior index of the melt resin, m is the ratio of the residence time of a resin flowing through the manifold and die side end to the residence time of a resin flowing through the



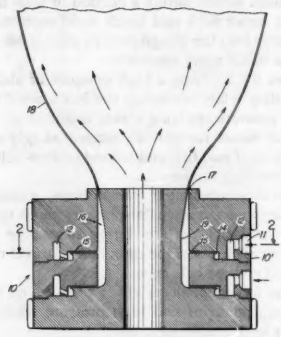
coat hanger slit part along the center line of the die and ranges from 1 to 50, L is the required half width of the die, and wherein the customary assumptions regarding resin melt viscosity, melt flow through the die, melt temperature and residence time have been made.

4,285,656

TUBULAR EXTRUSION APPARATUS

F. John Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,696
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—467 **1 Claim**



1. A side-fed tubular extrusion die comprising:

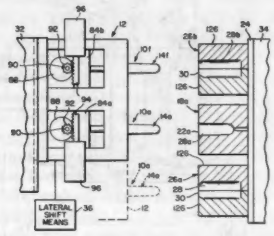
a sidewall defining the exterior of said die, an inlet orifice in said sidewall for introducing a molten resin into said die, a first toroidal-shaped chamber located interiorly of said die in communication with said inlet for receiving a molten resin introduced through said inlet orifice, a second toroidal-shaped chamber located interiorly of said die and substantially concentric with said first chamber, an annular interior die wall separating said first and second chambers, a plurality of openings provided in and spaced along said interior die wall, said openings interconnecting said first and second chambers to allow said second chamber to receive a molten resin from said first chamber, the cross-sectional area of said openings progressively increasing from an opening closest to said inlet orifice to an opening farthest removed from said inlet orifice, a said opening closest to said inlet orifice being out of axial registration with said inlet orifice to prevent said molten resin from taking a straight path from said inlet orifice through said closest opening and into said second chamber, and an extrusion gap defined by a mandrel positioned coaxially within said die and an interior die sidewall coaxial with said mandrel, said extrusion gap receiving molten resin from said second toroidal-shaped chamber.

4,285,657

INJECTION BLOW MOLDING APPARATUS

Leonard B. Ryder, 5 Sharon Dr., Whippany, N.J. 07981

Filed Dec. 3, 1979, Ser. No. 99,927
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—525 **9 Claims**



1. An apparatus for forming biaxially oriented articles from thermoplastic materials, said apparatus comprising:

(a) at least one injection mold defining an injection mold cavity having an open mouth and a horizontal longitudinal axis;

(b) two blow molds associated with and positioned laterally of each injection mold, each such blow mold defining a blow mold cavity having an open mouth and a horizontal longitudinal axis, the dimensions of each such blow mold cavity being greater than the dimensions of said injection mold cavity;

(c) two core assemblies corresponding to each injection mold and its associated blow molds, each such assembly including an elongated core rod having a horizontal longitudinal axis and a sleeve surrounding such core rod in the neck area, said sleeves and core rods having respective circumferentially extensive seal surfaces, each such core rod having a parison contact portion which extends outwardly to a parison contact end or tip, each such core rod being slidable relative to the associated sleeve, between a fully retracted position wherein its seal surface sealingly engages the seal surface of the associated sleeve and a fully extended position wherein its seal surface is spaced from the seal surface of the associated sleeve in an outward direction;

(d) support and transfer means, consisting of conventional injection molding machine platens, press, and lateral shifting mechanism for engaging and disengaging each of said core assemblies alternately with an injection mold and a blow mold, such that the sleeve of the core assembly is within the cavity mouth of the engaged mold and the core rod of the core assembly protrudes into the cavity of said mold, said support and transfer means being constructed and arranged to simultaneously engage one of said core assemblies with an injection mold and one of said core assemblies with a blow mold;

(e) neck form means, operative during the engagement of each of said core assemblies within an aforesaid mold, for defining the neck extension of the mold cavity and for retaining a parison about the core rod;

(f) core rod retractor means for retaining the core rod of each of said core assemblies in its fully retracted position while such assembly is engaged within an injection mold, and holding the core rod in this position during lateral transfer to a blow mold until the time the core rod is advanced for axial stretching;

(g) injection means comprising sprues in the injection mold which allow thermoplastic, in molten form, to be injected via a conventional runner system, into the cavity of each of the said injection molds while one of said core assemblies is engaged therewith to form a parison;

(h) core rod cooling means comprising interlaced helical

channels formed around a cylindrical flow director slug within the core rod wherein coolant is circulated throughout the core rod for maintaining parison contact surfaces of said core rod at cold temperatures relative to the injection temperatures at which the thermoplastic is processed, at least while such core rod is engaged within the injection mold;

(i) injection and blow mold cooling means for maintaining the cavity surface of each said injection and blow molds at cold temperatures relative to the injection temperatures of the thermoplastic being processed;

(j) equilibration means for promoting equalization of temperatures across the wall thickness of a parison during the interval between the engagement of the associated core rod within the blow mold and the advancement of the core rod of such assembly during axial stretching of the parison;

(k) core rod advance means for advancing the core rod of each of said core assemblies to a partially or fully extended position during each engagement of said core assemblies within a blow mold, so that an associated parison thereon may be stretched in an axial direction;

(l) blow gas passageway means for introducing gas under pressure within each parison while said parison is within a blow mold cavity, at a time not earlier than the aforesaid axial stretching of such parison, to radially expand and stretch the walls of such parison into intimate contact with the blow mold cavity surfaces, such that said parison assumes the final shape of a finished article;

(m) final cooling means for cooling each of said finished articles to a suitable ejection temperature within a blow mold cavity; and

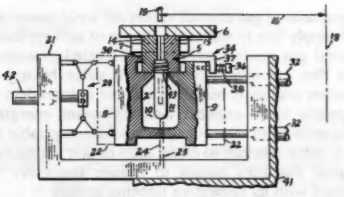
(n) means for releasing each finished article from its associated neck form means and for ejecting said finished article from its associated core assembly while said core assemblies are disengaged from said injection mold and blow molds.

4,285,658

SELF-CENTERING BLOW MOLD

Paul R. Bohart, and Joseph F. Gibbemeyer, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Feb. 1, 1980, Ser. No. 117,497
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—538 **10 Claims**



1. In an indexing rotary machine for blow molding more than one bottle at a time from a succession of respective preforms of thermoplastic material by moving said preforms while supported only by the neck from a chordally aligned split neck ring into a position between an initially spaced-apart pair of movable blow molds with each preform being aligned with a female cavity in each blow mold, said split neck ring having at least two parts that are movable relative to each other along a radius extending from the axis about which said ring is rotated in an indexing fashion, the improvement of a system for obtaining and keeping alignment between or among said neck ring and said blow molds which comprises:

a toggle system means for reciprocating one of said blow molds radially relative to said axis between an open position that permits said neck rings with preforms and with bottles blown from such preforms to index in to and away from, respectively, said position between without interference with said one blow mold and at least into the intended alignment at a center position;

a drive means to move the other of said blow molds radially of the machine and into engagement with said one blow mold;

at least one of said toggle system means and drive means for driving that blow mold linked thereto past a predetermined intended center position to an overcenter position and the other of said toggle system means and drive means for driving the other of said blow molds against the linked blow mold and both blow molds together from said overcenter position until both molds and neck ring parts are aligned for blowing at the intended center position;

mold contact means on at least one of the aforesaid blow molds, toggle system, and drive means and that one of said neck ring parts closest thereto for establishing contact therebetween after which contact they travel to said overcenter position together; and

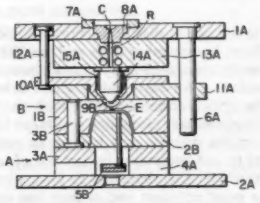
bias means on at least one of said blow molds for biasing said neck ring parts together and the neck ring against the other of said blow molds at least when said blow molds and split neck ring are aligned for blowing.

4,285,659

MOLD DEVICE FOR AN INJECTION MOLDING MACHINE

Hiroyasu Koike, Daitakubo 1901, Urawa-shi, Saitama-ken, Japan

Continuation-in-part of Ser. No. 837,722, Sep. 29, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,609
Claims priority, application Japan, Sep. 30, 1976, 51-117604; May 23, 1977, 52-66024
Int. Cl.³ B29C *1/03*
U.S. Cl. 425—547 **5 Claims**



1. A mold device for the production of molded articles by an injection molding machine, said machine including a fixed side and movable elements, comprising:

a mounting portion adapted to utilize a hot runner system by mounting a heater plate on a mounting plate on said fixed side and incorporating a runner nozzle in communication with the runner formed within said heater plate, said runner nozzle having a tip portion and an outlet orifice;

a mold plate on said fixed side, said mold plate having a runner concave portion formed as a depression in an installing surface portion of said mold plate, said concave portion having an inlet opening opposed to said nozzle orifice of said runner nozzle to receive molten material when flowing from said nozzle orifice;

said nozzle outlet orifice having an internal diameter and said inlet opening having an internal diameter, said inlet opening internal diameter at least one-third greater than said nozzle orifice internal diameter, whereby a very imprecise lateral alignment is permissable between said nozzle outlet orifice and said inlet opening and a large number of different mold plates may be used interchangeably with said runner nozzle and said fixed side;

a gate which is in communication with the interior of a mold cavity, opening from the bottom of said runner concave

portion, the inlet to said gate being separated from said nozzle orifice by a distance sufficient to produce a waste sprue corresponding substantially to said concave portion, said waste sprue produced during the molding of each of said articles and separable from said nozzle after the molding of each of said articles; and

a stripper means movable relative to said nozzle for stripping said waste sprue from said nozzle.

4,285,660

NOZZLE FOR A PLASTICS INJECTION MOLDING MACHINE, AN EXTRUDER ORIFICE, OR A HOT-CHAMBER TOOL

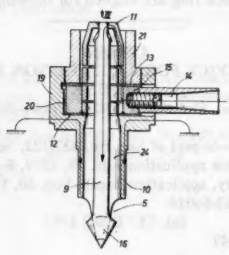
Walter Mueller, Battenberg, Fed. Rep. of Germany, assignor to Ewikon Entwicklung und Konstruktion GmbH & Co. Kommanditgesellschaft, Herford, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,514

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824971

Int. Cl.[3] B29F *1/03, 1/08*

U.S. Cl. 425—549 32 Claims



1. A nozzle for use in plastic injection moulding machines, extruder orifices, hot chamber tools and the like, comprising: a hollow forwardly elongated body with an interior bounded by an interior surface, a forward end in which at least one orifice is located, the orifice communicating with the interior of the body; and a single unitary elongated resistance heating element located within the interior and having an enlarged pointed head adjacent to and projecting in part out of said at least one orifice, the head being so shaped as to have a maximal surface area with the point adjacent said at least one orifice.

4,285,661

VALVE NOZZLE OF INJECTION MOLDING MACHINE

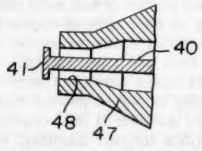
Akira Yotsutsuji; Seiichi Ueda, both of Nara, and Kiyoshi Uemura, Sakai, all of Japan, assignors to Osaka City, Osaka, Japan

Filed Nov. 30, 1979, Ser. No. 98,742

Claims priority, application Japan, Dec. 5, 1978, 53-149701; Oct. 22, 1979, 54-135276

Int. Cl.[3] B29F *1/03*

U.S. Cl. 425—563 4 Claims



1. A valve nozzle for an injection molding machine cooperable with a mold cavity, comprising:

a cylinder;

a longitudinal bore in said cylinder, said bore having a first portion of a first predetermined diameter at a first end of said cylinder and a second portion of second predetermined diameter at a second end of said cylinder, said second diameter being smaller than said first diameter;

an injection molding compound inlet to said bore at said first end;

an injection molding compound outlet from said bore at said second end, said outlet extending perpendicular to said bore;

a piston slidable in said bore, said piston having a first portion of said first predetermined diameter at said first end and a second portion of said second predetermined diameter at said second end, said piston including at least one passage extending through said first and second portions;

a valve stem extending from said piston toward said outlet and extendable into said mold cavity; and

a valve fixed to said stem adjacent said outlet, said valve forming a disk coaxial with said bore and seating upon said perpendicular outlet.

4,285,662

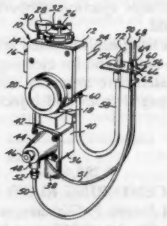
GAS BURNER CONTROL MECHANISM

Jay R. Katchka, Cypress, and Marvin M. Graham, Westminster, both of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 17, 1978, Ser. No. 934,533

Int. Cl.[3] F23Q *9/08*

U.S. Cl. 431—53 7 Claims



1. A control system for a gas fired appliance having a main burner and a single pilot burner, said control system comprising:

first and second gas control valves for serial connection in a gas supply line to said main burner of said appliance, said second gas control valve being located downstream of said first gas control valve, each valve having a valve member resiliently biased closed and independent electromagnetic valve member latching means energizable to hold each valve member open, and deenergizable to allow each valve member to close, each of said valves including manual operating means to engage the valve member thereof with its respective latching means;

conduit means coupled to said gas supply line between said first and second control valves, bypassing said second gas control valve, and in communication with said pilot burner of said appliance to supply gas thereto from said gas supply line;

thermocouple type flame sensing means;

bracket means to mount said flame sensing means adjacent said pilot burner for contact by the flame thereof; and

electrical conductors operatively connecting said flame sensing means to each of the latching means of the respective said first and second gas control valves for energization of said latching means upon heating of said flame sensing means by the flame of said pilot burner to hold open both said valve members of said first and second gas control valves, said latching means of both said first and second gas control valves being deenergized in the absence of said flame whereby both said valve members of

said first and second gas control valves are biased closed and gas flow through both said conduit means and said gas supply line is cut off.

4,285,663

PROCESS AND APPARATUS FOR THE CONTINUOUS BURNING OF A FUEL

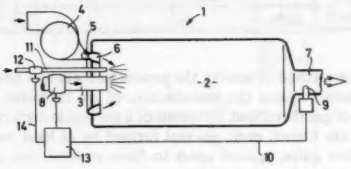
Wilfried Böder, Sulenstrasse 23, 3013 Barsinghausen, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,896

Claims priority, application Fed. Rep. of Germany, May 16, 1978, 2821367

Int. Cl.³ F23N *5/18*

U.S. Cl. 431—76 **14 Claims**



1. A process for the continuous combustion of a fuel comprising the steps of:

introducing a flow of combustible fuel into a combustion chamber;

introducing oxygen-containing gas into said combustion chamber at a predetermined flow rate;

igniting said fuel in the presence of said oxygen-containing gas, thereby creating an exhaust current after combustion;

measuring the oxygen content in said exhaust current; and

altering the rate of flow of said fuel into said combustion chamber, without changing the flow rate of said gas, in response to changes in the measured oxygen content in said exhaust current.

4,285,664

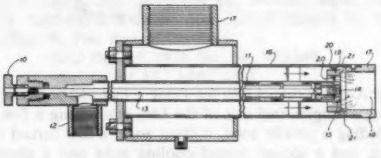
BURNER FOR A PLURALITY OF FLUID STREAMS

James T. Voorheis, 53 Park La., Essex Fells, N.J. 07021

Filed Apr. 2, 1979, Ser. No. 25,873

Int. Cl.³ F23Q *9/00*

U.S. Cl. 431—284 **1 Claim**



1. A burner for a plurality of fluid streams comprising,

(a) a first conduit for fuel,

(b) a nozzle on the end of the first conduit, to discharge atomized fuel,

(c) a second conduit for air or gas surrounding the first conduit,

(d) an annulus in the second conduit,

(e) the annulus spaced away from the first and second conduits,

(f) a flat, downstream bluff end on the annulus disposed perpendicular to the longitudinal axis of the first and second conduits,

(g) the downstream bluff end of the annulus disposed in general registration with the nozzle, whereby a toroidal turbulent eddy of gas and fuel is created,

(h) a third conduit for air or gas surrounding the second conduit,

(i) a second annulus on the third conduit,

(j) the second annulus spaced away from the second and third conduits,

(k) a flat downstream end on the second annulus, perpendicular to the longitudinal axis of the first, second and third conduits,

(l) the downstream end of the second annulus disposed in general registration with the nozzle, whereby the second annulus further contributes to the toroidal, turbulent eddy of gas and fuel.

4,285,665

ENGINES

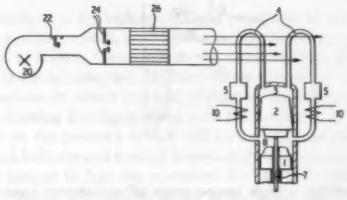
Bernard E. Enga, Maidenhead, England, assignor to Johnson, Matthey & Co., Limited, London, England

Filed May 4, 1979, Ser. No. 35,828

Claims priority, application United Kingdom, May 8, 1978, 18238/78

Int. Cl.³ F23D *13/12*; F01B *29/10*

U.S. Cl. 431—328 **7 Claims**



1. An external combustion unit of a Stirling engine which includes heater pipes comprising:

(a) a catalytic combustor;

(b) a pilot burner;

(c) means for supplying a stream of air to pass said pilot burner in order to heat said air;

(d) means for supplying fuel to said pilot burner;

(e) means for injecting additional fuel into the air stream after it has been heated by said pilot burner;

(f) means for passing the mixture of additional fuel and hot air to said catalytic combustor; and

(g) means for directing the resulting stream of hot gases leaving the catalytic combustor over the heater pipes of the Stirling engine,

said catalytic combustor comprising, a temperature stable oxidation resistant monolith which carries a catalyst and which provides catalytic channels for contact with and passage of the mixture of additional fuel and hot air such that catalytic combustion of the fuel takes place but in which a low pressure drop is produced,

the monolith being metallic and having a catalyst supported thereon selected from the group consisting of ruthenium, rhodium, palladium, iridium, platinum and alloys of the said metals with each other and with one or more base metals in an amount such that at least 10% by weight of the catalyst is a platinum group metal.

4,285,666

APPARATUS AND METHOD FOR INCREASING FUEL EFFICIENCY

Chester G. Burton, 8940 Tripoli Dr., Cincinnati, Ohio 45239, and John H. Burton, 51 Kathryn Ave., Florence, Ky. 41042

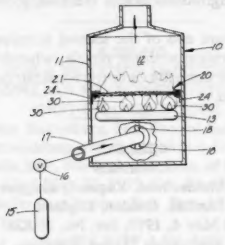
Continuation-in-part of Ser. No. 850,255, Nov. 10, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 68,166

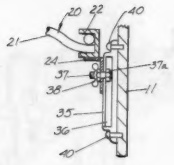
Int. Cl.³ F23D *13/12, 19/00, 13/14*

U.S. Cl. 431—347 **11 Claims**

1. Apparatus for increasing the efficiency of a furnace utilizing hydrocarbon fuel, comprising a combustion chamber in

which a flame is produced, a burner extending into said chamber for introduction of a gaseous or vaporized hydrocarbon fuel and oxygen-containing gas into the chamber, means for supplying said hydrocarbon fuel and oxygen-containing gas to said burner, a single stage generally planar reticulated element





comprising a high temperature alloy support coated with a platinum-containing catalyst, and means for adjustably positioning said reticulated element relative to said burner in the oxidizing region of said flame adjacent the interface between the oxidizing and reducing regions thereof.

4,285,667

RECEIVER FOR SOLAR POWER STATIONS

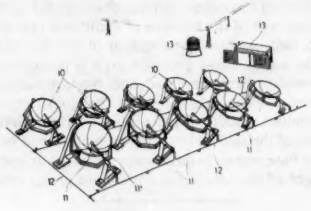
Guenther Schmidt, Taufkirchen, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 26,181

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817166

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—438 **11 Claims**



1. A receiver for solar power stations, comprising hollow mirror means each having a respective focal point, spherical absorber means operatively positioned substantially in the respective focal point, said spherical absorber means comprising spherical or hemispherical body means having respective surface wall means, distributed circulatory duct means operatively forming part of said surface wall means, and galvanically deposited cover layer means formed over said surface wall means and duct means, said spherical absorber means being irradiated on the outside thereof by sunlight concentrated by the hollow mirror means.

4,285,668

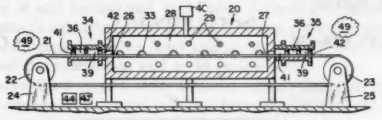
PRESSURIZED GAS SEAL FOR FURNACE ATMOSPHERE CONTAINMENT

Robert D. Pepe, 132 Fremont St., Lowell, Mass. 01850

Filed Oct. 3, 1979, Ser. No. 81,279

Int. Cl.³ F27D *7/00, 1/18;* F26B *25/00*

U.S. Cl. 432—19 **6 Claims**



1. The method of sealing the pressurized gas in a heat treatment tunnel aganst the introduction of air thereinto, or the escape of gas therefrom, by means of a gas seal at each opposite end of the tunnel, each gas seal formed by at least two flow restrictive gates, spaced apart to form at least one gas seal chamber therebetween which comprises the steps of:

establishing and maintaining a predetermined volumetric flow of sealing gas in each said gas chamber at a pressure greater than the pressure of gas in said heat treatment tunnel and greater than ambient atmospheric pressure;

and adjusting said gates so that the difference in pressure in said atmosphere, sealing chamber and tunnel causes accelerated flow through the flow restrictive gates to prevent mixing or diffusion of gases.

4,285,669

ROLLER KILN PROVIDED WITH A DRYING TUNNEL, PARTICULARLY FOR CERAMIC OR REFRACTORY MATERIALS

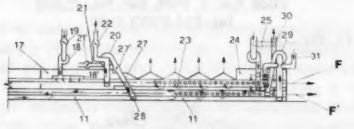
Ulrico Walchhutter, Via Accademia 39, Milan, Italy

Filed Nov. 21, 1979, Ser. No. 96,579

Claims priority, application Italy, Nov. 23, 1978, 30090 A/78

Int. Cl.³ F27D *15/02;* F27B *3/04;* F26B *19/00*

U.S. Cl. 432—82 **19 Claims**



1. A roller tunnel kiln for firing a material to be advanced along a longitudinal axis of the kiln, comprising a first tunnel including a prekiln zone, a firing zone, a first forced cooling zone, and a second forced cooling zone and a plurality of refractory rotary rollers positioned transversely to said axis and constituting a progress plane for the material advanced along said rotary rollers; means for providing hot gases in said first tunnel, so that hot gases are flowing through said first tunnel; a second tunnel for drying the material and extending parallel to said first tunnel along the length thereof and thermally insulated therefrom, said second tunnel including a plurality of transversely positioned rotary rollers constituting a progress plane for the material to be dried and advanced along said rollers; means for introducing ambient air into said first tunnel; discharging means to withdraw a portion of the hot gases from said first tunnel; mixing means for mixing said portion of hot gases received from said first tunnel with a portion of ambient air received from said ambient air introducing means; and means for communicating said mixing means with said second tunnel and adapted to form a current of hot

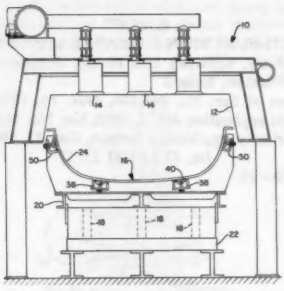
gases at drying temperatures passing through said second tunnel in a direction opposite to that of the material to be dried.

4,285,670

SHAKER CONVEYOR CONSTRUCTION

Henry J. Venetta, 9613 Holland Springs Rd., Warren, Ohio 44484

Filed Dec. 6, 1979, Ser. No. 100,966
Int. Cl.³ F27D *23/00*
U.S. Cl. 432—88 **7 Claims**



1. In a metal heating apparatus, a plurality of metal deck plates positioned in longitudinally overlapped, aligned relation to form a metal receiving and transmitting conveyor, said deck plates being of substantially flattened U-shape in transverse vertical section, a plurality of metal plate saddles below said deck plates and having recessed upper surfaces contoured to receive said deck plates therein, said saddles extending transversely of said deck plates and supporting the same,

bolt anchor means secured to spaced portions of the lower surfaces of said deck plates,

support means secured to and extending between said saddles, and

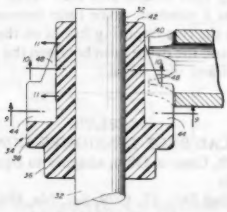
bolt means secured to said support means and engaging said bolt anchor means to secure said deck plates to said saddles.

4,285,671

CONTRA ANGLE WITH INTERCHANGEABLE GEARED TOOLS AND THE LIKE

Leopold P. Lustig, 304 Greenwood St., Newton Center, Mass. 02159, and Sigrid Bechter, Strassberger Strasse 65, 8000 Munchen 40, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,468
Int. Cl.³ A61C *1/08*
U.S. Cl. 433—126 **8 Claims**



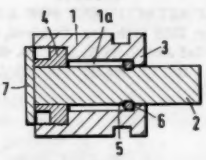
1. A spur gear on a shaft for rotating the shaft around its longitudinal axis, in which gear teeth project radially away from the shaft axis and extend a distance in the axial direction, characterized in that at one end of the gear the teeth taper radially toward the shaft and simultaneously the root thickness of each tooth tapers uniformly on both sides circumferentially toward a point, whereby the teeth at said one end are tapered subtantially conically to a point.

4,285,672

MORTISE LOCK FOR LOCKING A REMOVABLE TOOTH-REPLACEMENT PROSTHESIS

Wolfgang Gabriel, Ostallee 17, 5500 Trier, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 135,161
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—172 **12 Claims**



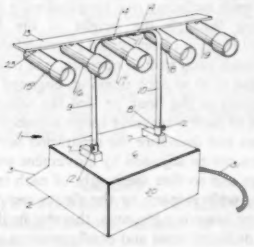
1. In mechanism for locking a dental prosthesis to a keeper fixed in a patient's mouth, such mechanism including a housing adapted to be fixed in the prosthesis and a bolt having a portion received in the housing and slidable relative thereto between a locked position in which one end portion of the bolt projects from the housing for engagement with the keeper to lock the prosthesis in the patient's mouth and an unlocked position in which such bolt one end portion is retracted for disengagement from the keeper to free the prosthesis for removal from the patient's mouth, the improvement comprising the housing having a first end wall forming a flange projecting generally inward toward the bolt portion received in the housing, and an elastic ring encircling the bolt and moved therewith between the locked and unlocked positions of the bolt, said housing first end wall being abutted by said elastic ring in unlocked position of the bolt for limiting retraction of the bolt.

4,285,673

COLOR DEMONSTRATION DEVICE AND METHOD

Mark A. Thomas, 740 Purcell Ave., Cincinnati, Ohio 45205

Filed Apr. 26, 1979, Ser. No. 33,534
Int. Cl.³ F21V *9/00*
U.S. Cl. 434—98 **10 Claims**



1. A color demonstration and teaching device for illustrating the reflective and absorptive characteristics of objects of various configurations and colors under the influence of illumination of varying intensity and color, said device comprising illumination means for producing directional illumination of preselected color and intensity and visually perceptable target means positioned in the path of said illumination, said illumination means comprising:

a. a base member having means for providing stable support of said illumination means on a planar surface;

b. means attached to said base member for supporting a plurality of light sources;

c. red, green and blue light sources for projecting red, green and blue light, respectively, spaced along said support means, each of said light sources including means for projecting a substantially unidirectional stable beam of monochromatic light on the target means;

d. means for independently selecting the light intensity output of each of said light sources to permit illumination of said target means in a multiplicity of selectable color permutations.

4,285,674

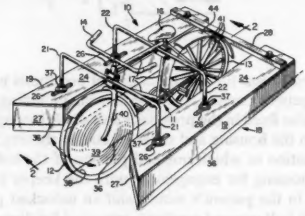
FLOAT ATTACHMENT FOR A BICYCLE

Thomas S. Chew, 2319 11th Ave., Oakland, Calif. 94606

Filed Jun. 7, 1979, Ser. No. 46,453

Int. Cl.³ B63H *1/00, 16/12*

U.S. Cl. 440—12 **2 Claims**



1. An amphibious attachment capable of fitting a wide variety of sizes and styles of bicycles, comprising:

a pair of elongated floats spaced apart to accomodate a bicycle frame and wheels between them, the floats extending substantially the entire length of a bicycle and each being unitary and continuous throughout such length;

a pair of transverse frame members connecting the floats at forward and rearward locations and maintaining the floats rigidly in spaced relationship, each transverse frame member comprising a generally vertical member extending up from each float and a generally horizontal member spanning between and affixed to the tops of the vertical members, each vertical member having a threaded portion extending to its lower end and taller than the height of a float, with two nuts engaged on each threaded portion;

the floats each including two longitudinally slotted openings extending through the height of the float, with the threaded portion of one of said vertical members extending through each slotted opening, one nut above and one below the float at each opening, engaged against the top and bottom of the float, so that the relative fore-and-aft position of each transverse frame member with respect to the floats and therefore the separation between the frame members can be adjusted by movement within the slotted openings and so that the height of each transverse frame member with respect to the floats can be adjusted by raising or lowering the nuts, thereby facilitating connection to different sizes and configurations of bicycles;

centrally positioned front connecting means on the forward transverse frame member for removably connecting it to the front fork-retaining sleeve of the bicycle frame, including means for accommodating various configurations of bicycle frames;

centrally positioned rear connecting means on the rearward transverse frame member for removably connecting it to a generally upright member of the bicycle frame, below the seat, including means for accommodating various configurations of bicycle frames;

a rigid circular disc and means for mounting it substantially flushly on the front wheel of the bicycle, within the space encompassed by the front wheel rim, so that the front wheel becomes a steerable rudder; and

a series of impeller vanes and means for mounting them on the rear wheel of the bicycle, so that the rear wheel becomes a propelling means;

whereby the amphibious attachment may be fitted to nearly any bicycle of conventional configuration, adapting it for use in water, suspended by the floats with the front and rear wheels partially submerged, so that the bicycle may be propelled by pedalling and steered by steering of the front wheel.

4,285,675

MULTI-FUNCTION VARIABLE SPEED DRIVE

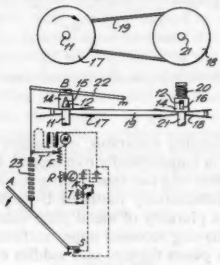
Denis M. Kiely, Killarney Hill House, Ardmore Park, Bray, County Wicklow, Ireland

Continuation of Ser. No. 961,166, Nov. 16, 1978 abandoned. This application Jul. 3, 1980, Ser. No. 165,881

Claims priority, application Ireland, Dec. 12, 1977, 2516/77

Int. Cl.³ F16H *55/52*

U.S. Cl. 474—19 **21 Claims**



1. A variable speed drive for a battery-powered electric vehicle, the drive comprising a drive pulley of variable effective diameter mounted on a drive shaft, a follower pulley of variable effective diameter mounted on a driven shaft, a flexible belt passing around both pulleys and serving to transmit power from the drive pulley to the follower pulley, means for automatically adjusting the effective diameter of the follower pulley in accordance with that of the drive pulley to maintain the flexible belt under tension, manually-operable accelerator means resiliently coupled to the drive pulley for applying a manually adjustable force thereto tending to increase the effective diameter of the drive pulley and thereby increase the drive ratio to the pulleys, and means mechanically coupling the drive shaft to the drive pulley for automatically applying an opposite force to the drive pulley tending to decrease the effective diameter thereof and thereby decrease the drive ratio of the pulleys, the opposite force having a magnitude which increases with increasing load torque and vice versa, the arrangement being such that a constant drive ratio between the pulleys is obtained when the two opposing forces on the drive pulley are in equilibrium and the drive ratio between the pulleys falls with increasing load and vice versa.

4,285,676

MECHANICAL BELT TENSIONER CONSTRUCTION

Derald H. Kraft, Canton, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Filed Dec. 17, 1979, Ser. No. 104,439

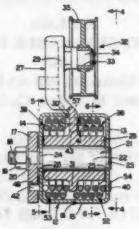
Int. Cl.³ F16H *7/12*

U.S. Cl. 474—135 **9 Claims**

1. A belt tensioner construction for automatically tensioning an endless belt of the drive system for vehicle accessories, said tensioner construction including:

(a) a housing adapted to be mounted in a fixed position on a vehicle engine adjacent the drive belt;

(b) a shaft mounted within the housing;
(c) lever means pivotally mounted on the shaft and extending generally radially outwardly from the housing;
(d) pulley means mounted on the lever means and engageable with the drive belt for applying a tensioning force on said belt when the lever means is biased in a belt tensioning direction;
(e) first and second cylindrical coil springs telescopically mounted on the shaft in an axially spaced relationship with respect to each other on respective sides of the lever means, each of said coil springs terminating in a pair of ends, with one end of each coil spring being fixed to the housing and the other end of each coil spring being fixed to the lever means so that upon pivotal movement of the lever means in a direction opposite the belt tensioning



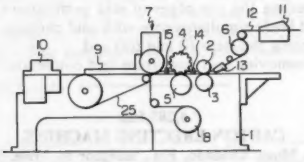
direction builds up tension in said first and second springs biasing the lever means in the belt tensioning direction; and
(f) a third cylindrical coil spring having an internal diameter complementary to the outer diameter of the first coil spring telescopically mounted with respect to the shaft and said first spring and concentric thereto, said third spring terminating in a pair of ends with one end being fixed to the housing and the other end being fixed to the lever means so that upon pivotal movement of the lever means in a direction opposite the belt tensioning direction builds up tension in said third spring biasing the lever means in the belt tensioning direction increasing the biasing forces asserted by the first and second coil springs on said lever means.

4,285,677

METHOD AND APPARATUS FOR THE MANUFACTURE OF CIGARETTE FILTERS CONTAINING PARTICULATE MATERIAL

Akira Ito, Tokyo, and Katsuharu Arisaka, Sakai, both of Japan, assignors to Daicel Ltd., Osaka, Japan

Filed Sep. 7, 1979, Ser. No. 73,491
Int. Cl.³ A24C 5/50
U.S. Cl. 493—43 **6 Claims**



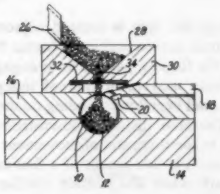
1. A method for the manufacture of cigarette filters containing particulate material, comprising the steps of:
plasticizing a filter material composed of thermoplasticity filaments with plasticizer and converging said filter material;
continuously feeding said filter material in the axial direction;
pressing said filter material in the axial direction so as to make the transverse cross-section thereof a substantially oval shape;
pressing said filter material toward the interior thereof along the shorter diameter of said substantially oval cross-section so that the transverse cross-section of said filter material is changed to a shape wherein two campaniforms are arranged symmetrically and connected to each other;
providing pockets at axially spaced positions on said pressed surface of said filter material;
depositing a particulate material in said pockets;
folding and closing said filter material so that the deposited particulate is positioned in the interior of said filter material; and,
wrapping said filter material with wrapping sheets.

4,285,678

METHOD AND APPARATUS FOR MAKING COMPOSITE FILTER ROD

Desmond W. Molins, London, England, assignor to Molins Limited, London, England

Filed Mar. 19, 1979, Ser. No. 21,814
Claims priority, application United Kingdom, Mar. 23, 1978, 11587/78
Int. Cl.³ A24C 5/52
U.S. Cl. 493—48 **18 Claims**



1. A method of making composite filter rod comprising feeding a stream of axially spaced filter portions in an axial direction; feeding a wrapper having a width which is greater than the circumference of said filter portions; partially enclosing the stream in said wrapper so that said wrapper extends more than 180° around the space between adjacent filter portions leaving an opening having a width in the range of 15 to 75% of the diameter of the filter portions, said wrapper being longitudinally folded to produce a horizontal fold or bend line between an inner and an outer part of said wrapper, said inner part extending around said space toward said opening and said outer part extending away from said opening at an angle less than 90° to said inner part at said fold or bend line, and said line defining one side of said opening; introducing loose filtering material into the space between the filter portions through said opening; and converting said opening with said outer part of the wrapper to complete the rod.

4,285,679

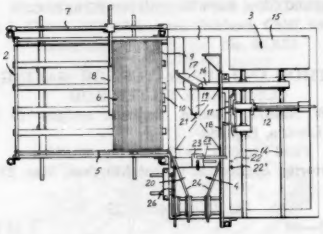
APPARATUS FOR SETTING UP SLIT-BOXES

Peter Wahle, Vellinge, Sweden, assignor to Sundpacma Aktiebolag, Malmo, Sweden

Filed Sep. 13, 1979, Ser. No. 75,236
Claims priority, application Sweden, Sep. 15, 1978, 7809765
Int. Cl.³ B31B 5/02
U.S. Cl. 493—125 **7 Claims**

1. In an apparatus for setting up and bottom closing slit boxes which are supplied to the apparatus as collapsed carton tubes comprising sides and bottom flaps and top flaps integral therewith, said apparatus comprising a support which carries a magazine for the carton blanks, a feeder unit including a suction catcher means for pulling a blank out of the magazine, for setting up the blank to a tubular form and for moving the set up blank along a feeding path, bottom flap closing means pro-

vided along the feeding path of the suction catcher means for bottom closing the carton tube while the latter is moving along the feeding path, means for moving the suction catcher means in a first direction for successively catching and setting up carton blanks from the magazine and for moving the suction catcher means in a second direction along the feeding path while bottom closing the tubular carton blank and for returning the suction catcher means to the initial position thereof to enable catching of a further carton blank from the magazine, the improvement wherein the feeder unit including the suction catcher means carries an expelling means having an expellor arm which is rotatable between a first, inactive position



wherein the expellor arm is located adjacent to the feeding path and a second, active position wherein the expellor arm is located inside the feeding path so as to engage a carton in said path and provide movement thereof independently of said suction means, said expellor arm being connected to the feeder unit at an adjustable distance downstream of the suction catcher means in the direction of movement along the feeding path so as to provide movement of a first carton blank along the feeding path while the suction catcher means moves a second carton blank along the feeding path, the position of the expellor arm being adjusted to said predetermined distance downstream of the suction catcher means.

4,285,680

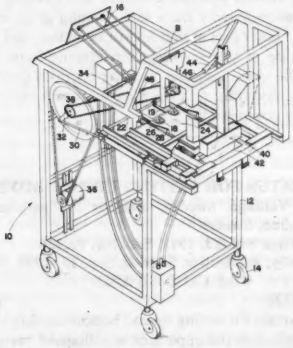
CARTON BLANK FEEDING AND GLUE APPLYING APPARATUS

Arthur E. Randles, 4617 S. 3rd Ave., Tucson, Ariz. 85714

Filed Nov. 23, 1979, Ser. No. 96,621

Int. Cl.³ B31B *3/02, 3/60*

U.S. Cl. 493—132 **1 Claim**



1. In a box forming machine including a generally horizontal slideway with a folding station at the downstream end thereof and glue wheels on a glue wheel shaft rotatable below said slideway in a glue container and having arcuately spaced radial projections thereon having outer surfaces of a common radius whereby they engage box blanks moving over said slideway to apply thereto spaced patches of glue;

the improvement comprising:

a carriage reciprocable along said slideway;

drive means connected to said carriage for reciprocating same;

pusher fingers on said carriage to engage and push a box blank on said slideway to said folding station as said carriage is extended from a retracted position;

a rack on said carriage to reciprocate therewith; and

a gear on said glue wheel shaft having a pitch radius equal to the radius of said radial projections;

said rack meshing with said gear to rotate said glue wheels so that said outer surfaces move at the surface speed of said reciprocating carriage at any given instant.

4,285,681

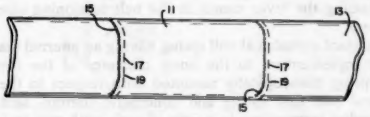
TEAR RESISTANT SEPARABLE END-CONNECTED BAGS

Charles R. Walitalo, Matteson, and Alvin E. Ericson, Chicago, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 872,168, Jan. 25, 1978, abandoned, which is a continuation of Ser. No. 696,227, Jun. 15, 1976, abandoned, which is a division of Ser. No. 527,430, Nov. 26, 1974, abandoned. This application Aug. 29, 1979, Ser. No. 70,883

Int. Cl.³ B31B *1/14;* **B32B** *31/18, 31/20*

U.S. Cl. 493—194 **6 Claims**



5. A method for making packaging bags of flexible oriented plastic film material comprising the steps of:

(a) forming a continuous strand of separable end-connected flexible oriented plastic film packaging bags by

(i) advancing a continuous length of flattened flexible plastic film tubing having opposed walls in contact with each other to a bag forming station;

(ii) forming, at the bag forming station, a heat seal transversely across the flattened flexible plastic film tubing to seal the opposed walls thereof into a bag bottom;

(iii) cutting elongate perforations with a heated blade through said tubing to define interperforation tabs of tubing material linearly aligned with the perforations, tear-directed into the tubing material adjacent said bag bottom, said perforations being substantially parallel to said bag bottom forming heat seal, to form a bag mouth joined to the tubing material adjacent said bag bottom by said interperforation tabs;

(iv) annealing the cut edges of said perforations with said heated blade simultaneously with said cutting;

(v) repeating the steps (i) and (iv) and

(b) tear-removing said bags from said continuous strand.

4,285,682

CARTON ERECTING MACHINE

Edward L. Moss, Orlando, Fla., assignor to Moss Machinery Manufacturers, Inc., Orlando, Fla.

Filed Apr. 25, 1979, Ser. No. 33,210

The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.

Int. Cl.³ B31B *1/62, 1/80, 3/02*

U.S. Cl. 493—316 **12 Claims**

1. An apparatus for erecting folded cartons having flaps, comprising in combination:

a first and a second carton track established in a substantially L-shaped configuration;

each of said first and second tracks having a first and a second end;

carton magazine means disposed adjacent said first track;

first track movement means for moving a folded carton on said first track from said carton magazine means to said second track;

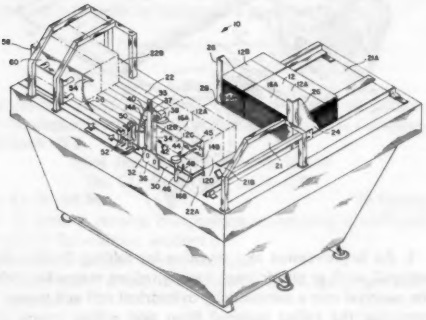
carton erecting means proximate the intersection of said first and second track for erecting the folded carton;

second track movement means for moving the erected carton from said first end of said second track to said end of said second track;

flap folding means disposed adjacent said second track for folding the flaps of the carton;

sealing means proximate said second track for sealing the flaps of the erected carton into a rigid structure;

first means for driving said first track movement means in a reciprocal movement for serially moving said plurality of



cartons from said first end to said second end of said first track;

second means for driving said second track movement means for serially moving said plurality of cartons from said first end to said second end of said second track;

means for synchronizing the movement along said first and second tracks;

one of said first and second track movement means including a first and a second rotatable member space relative to one another;

flexible means about said rotatable members and having a driving portion on said flexible means for generating a reciprocal movement of said driving portion relative to said track; and

means cooperating with said driving portion for intermittently and sequentially moving cartons along said track upon rotation of said rotatable members.

4,285,683

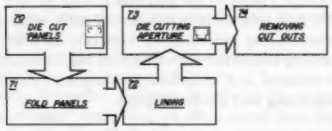
METHOD OF MAKING A DISPLAY MOUNT

Carroll N. Cross, Rte. 2, Box 741, Maitland, Fla. 32751

Continuation-in-part of Ser. No. 870,745, Jan. 19, 1978, Pat. No. 4,199,883. This application Jan. 28, 1980, Ser. No. 116,158

Int. Cl.³ G09F 1/10

U.S. Cl. 493—325 **5 Claims**



1. A method of making a display mount comprising the steps of:

cutting a blank of planar material to form a back, an intermediate, and a partial face panel, and cutting at least one curved incision into the intermediate panel of three panels formed on said blank;

superimposing said panels to form face-to-face planar surfaces with said partial face panel extending over at least a portion of said cut incisions in said intermediate panel;

case binding the front of said superimposed panels with a flexible lining material extending about multiple edges and adhesively attaching said lining material thereto for binding said panels together;

simultaneously die cutting a generally U-shaped incision in said partial face panel extending to a line inside one edge thereof and cutting a generally inverted U-shape into said intermediate panel co-acting with said incision already made in said intermediate panel; and

removing the severed portions of said partial panel and said intermediate panel to form a display mount having an inserting passage between the overlapping edges of said face panel and said base panel.

4,285,684

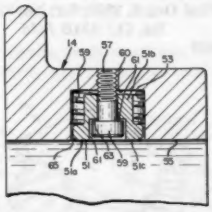
HEAD FOR SLITTER-CORRUGATOR

Willis D. Smith, Camas, Wash., assignor to Tidland Corporation, Camas, Wash.

Filed Jul. 24, 1978, Ser. No. 927,569

Int. Cl.³ B26D 7/26

U.S. Cl. 493—355 **7 Claims**



1. A head for a sheet slitter-corrugator comprising a ring member slidably fitting on a supporting shaft,

said ring member having an inner cylindrical surface to be engaged by a clamping means on the shaft for fixedly holding said ring member in a desired position of adjustment,

and movement-resisting biasing means on said ring member for applying a biasing force between the ring member and supporting shaft when said clamping means is inoperative, to thereby releasably retain said ring member against axial movement whereby to prevent inadvertent movement that might otherwise occur at said head set-up time but permitting axial movement in either direction of said ring along the shaft to facilitate setting up of said ring.

4,285,685

APPARATUS FOR FORMING LOOPS IN TUBE SECTIONS FOR MAKING SACKS FOR THE PURPOSE OF COMPENSATING FOR DIFFERENT LENGTHS OF SECTIONS

Fritz Achelpohl, Lengerich, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,362

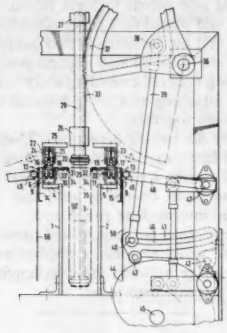
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1978, 2838569

Int. Cl.³ B31B 1/52

U.S. Cl. 493—406 **12 Claims**

1. Apparatus for forming loops in transversely fed tube sections for making sacks, comprising two parallel double belt conveyors (**10, 16; 11, 17**) for clamping the tube sections at both sides at equal spacings from their centre line, a punch (**28**)

vertically movable in the medial plane (35) between the double belt conveyors (10, 16; 11, 17), means for raising and lowering



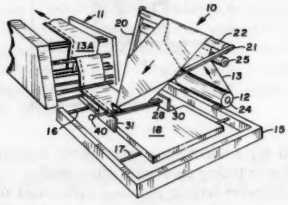
said punch, and suckers (29) positioned on the lower end portion of said punch for suction attracting tube sections.

4,285,686

V-BOARD FOLDER FOR FLEXIBLE PLASTIC FILMS

James R. Ambler, Seekonk, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Oct. 5, 1979, Ser. No. 82,091
Int. Cl.³ B31B *1/36*
U.S. Cl. 493—439 **4 Claims**



1. Sheet folding means comprising a triangular frame structure having an apex over which a web of sheet material is passed forming folds therein and including:

(a) frame means, first and second mutually convergent arm member secured to said frames and converging toward an apex adjacent the tip ends thereof, and with the respective tip ends normally being spaced apart to form a lateral gap therebetween;

(b) first and second tip plates adapted for mounting upon said first and second mutually converging arm members respectively;

(c) said first and second tip plates each being polygons with linear edges, the dimensions of said linear edges being selected so as to span the space between said convergent arm members at the tips of said convergent arm members to form a selected apex point, the arrangement being such that the apex point is disposed generally at a predetermined location projected outwardly from the ends of said convergent arm members; and

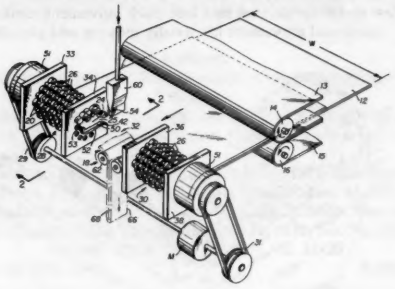
(d) a gusset forming member being provided, said gusset forming member having a pair of convergent edge surfaces forming an apex, and with said gusset forming member being secured to said frame means and adjustably disposed with the apex of said gusset forming member positioned generally within the lateral gap between said projected apex and the linear edges of said tip plates.

4,285,687

MACHINE FOR FOLDING PLASTIC SHEET MATERIAL

James A. McDonald, Palos Heights, Ill., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,382
Int. Cl.³ B65H *45/18*
U.S. Cl. 493—444 **7 Claims**



1. An improvement in a machine for folding flexible sheet material, such as plastic bags, having rolling means for rolling the material into a substantially cylindrical roll and means for removing the rolled material from said rolling means in a flattened state, and wherein said rolling means comprises a rolling section divided into at least two laterally disposed rolling sub-sections spaced apart so as to provide a predetermined unobstructed open area therebetween, each of said rolling sub-section being arranged in an arc circumscribing a minimum of 270° of a circle for forming a cul-de-sac having an internal moving curved surface on its inward side through a substantial portion of said 270° for driving the material into a roll, each of said sub-sections having inner and outer end plates confining the internal moving surface of each sub-section, said inner end plates on opposite sides of said open area each having an aperture in alignment with said cul-de-sac and a predetermined geometry partially conforming to the shape of said cul-de-sac, with each sub-section having an entrance opening for receiving said material, each inner plate of a sub-section having first planar surfaces facing one another and bonding said open area, said means for removing the rolled material being arranged relative to said open area to establish a discharge path through said open area in a predetermined direction normal to the longitudinal axis of said rolled material, said improvement comprising an extension portion of said moving surface cantilevered from each of said inner plate first planar surfaces into said open area, means interconnecting each extension portion with its respective sub-section to permit synchronous rolling motion of each said extension portion with its respective sub-section, wherein said extension portions provide rolling auxiliary support for said plastic bags as they are being rolled into said substantially cylindrical rolls, with said extension portions being spaced-apart from one another to permit said removing means to remove a rolled bag from contact with said sub-sections and extension portions and discharge said rolled bag along said discharge path.

4,285,688

SADDLE OIL

Monte B. Willis, Randolph, Utah, assignor to Leather Life, Inc., Randolph, Utah

Filed Mar. 28, 1979, Ser. No. 24,670
Int. Cl.[3] C14C *9/00*
U.S. Cl. 8—94.1 R 5 Claims

1. A leather treating composition consisting of (a) 30–50 parts by weight of a non-drying oil selected from the group consisting of neatsfoot oil, lard oil and a synthetic or petroleum oil having the same non-drying characteristics as neatsfoot oil and lard oil, (b) 20–30 parts by weight of a non-drying vegetable oil selected from the group consisting of olive oil, peanut oil, almond oil, hazelnut oil and peach kernel oil, (c) 10–20 parts by weight of an animal fat selected from the group consisting of beef tallow, bone fat and mutton tallow, (d) 5–10 parts by weight of a natural wax selected from the group consisting of beeswax, spermaceti, carnuba candelilla and wool fat and (e) 5–10 parts by weight of a paraffin wax.

4,285,689

LEATHER TANNING COMPOSITION AND METHOD

Marcel Siegler, North Bergen, N.J., assignor to Seton Company, Newark, N.J.

Filed Jun. 26, 1979, Ser. No. 52,149
Int. Cl.[3] C14C *3/06, 3/16, 3/08*
U.S. Cl. 8—94.26 36 Claims

1. A leather tanning composition comprising a sufficient amount of the reaction product of:

(a) a polyaldehydic compound; and

(b) a secondary amine, to increase the shrinkage temperature of a hide.

4,285,690

NOVEL REACTANTS FOR CROSSLINKING TEXTILE FABRICS

Bernard F. North, Rock Hill, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 92,630, Nov. 8, 1979, abandoned. This application Nov. 17, 1980, Ser. No. 207,247
Int. Cl.[3] D06M *13/34*
U.S. Cl. 8—186 6 Claims

1. A reactant for imparting permanent press properties to a textile containing cellulose fibers which comprises the alkylated product of the reaction of approximately stoichiometric amounts of glyoxal and at least one cyclic urea.

4,285,691

ALKOXYLATED FATTY AMINES AND POLYAMINES AS RESERVING AGENTS

Hermann Egli, Basel, and Emil Engeler, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jan. 31, 1980, Ser. No. 117,254
Claims priority, application Switzerland, Feb. 6, 1979, 1149/79
Int. Cl.[3] D06P *5/00, 3/87, 5/12, 5/13*
U.S. Cl. 8—455 18 Claims

1. A process for dyeing an anionic dyeable substrate with reserve effects, which process comprises

(1) impregnating the substrate with a dyeing liquor containing an anionic dye having a K′-value ≧5

(2) directly thereafter applying locally to the substrate a liquor or paste containing an alkoxylated fatty amine or polyamine having affinity for anionic dyes with a K′-value ≧5 and

(3) subsequently submitting the substrate to a heat treatment to effect fixation of the dye.

4,285,692

GRANULAR PREPARATION OF VAT DYESTUFFS AND/OR DISPERSE DYESTUFFS

Willy Schiwy, Monheim; Jürgen Schulze, Leverkusen; Ferdinand Hummes, Bergisch-Gladbach; Peter Schulze, Leverkusen; Reinhold Hörnle, Cologne; Hans-Heinz Mölls, and Harry Orttmann, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 4, 1979, Ser. No. 81,968
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1978, 2846149
Int. Cl.[3] D06P *5/00;* C09B *67/00*
U.S. Cl. 8—499 7 Claims

1. Process for the production of granular mixtures of vat dyestuffs and/or disperse dyestuffs, characterised in that liquid or pasty, finished formulations of two or more vat dyestuffs and/or disperse dyestuffs are spray-dried together to form granules.

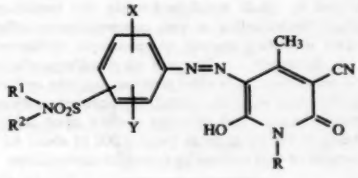
4,285,693

DYEING OF SURFACE COATINGS, ORGANIC SOLVENTS AND PETROLEUM PRODUCTS

Guenther Lamm, Hassloch, and Johannes Dehnert, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 8, 1980, Ser. No. 138,405
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917063
Int. Cl.[3] D06P *3/00*
U.S. Cl. 8—521 3 Claims

1. A process for dyeing surface coatings, organic-solvents and petroleum products, wherein the dye used is a compound of the formula I:



where R is C_1–C_{17}-alkyl, which may or may not be interrupted by oxygen and may or may not be substituted by hydroxyl or phenoxy, or is allyl,

R^1 is hydrogen or C_1–C_8-alkyl,

R^2 is C_7–C_{12}-alkyl, C_7–C_{12}-alkyl interrupted by oxygen and optionally substituted by hydroxy or phenoxy, or is C_7–C_{11}-aralkyl,

X is hydrogen, chlorine, methyl or methoxy, and

Y is hydrogen or methyl.

4,285,694

COLD PADDING BATCH DYEING PROCESS FOR TUBULAR KNITTED FABRICS

Shimpei, Itoh Suita; Masaru Daimon, and Tadashi Kato, both of Itami, all of Japan, assignors to Nittobo Itamikako Co., Ltd., Itami, Japan

Filed Dec. 19, 1979, Ser. No. 105,441
Claims priority, application Japan, Dec. 26, 1978, 53-161532
Int. Cl.[3] D06P *3/82*
U.S. Cl. 8—532 9 Claims

1. A cold padding batch dyeing process for a tubular knitted fabric of cotton or a cotton blend, comprising:

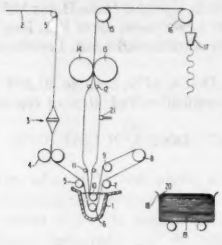
feeding said tubular knitted fabric into a padding tank;

inflating said fabric with air by forcing air into said fabric to expand it into a tubular shape;

squeezing said fabric at a squeezing rate of 95 to 120% by

passing it between a pair of mangles each having a layer of rubber having a Shore hardness of 55 to 70; and

ageing said fabric for at least a period over four hours;



the length of time between entry of said fabric into said padding tank and its departure from said mangles being limited to between 10 and 20 seconds.

4,285,695

PROCESS FOR INHIBITING CRUST FORMATION IN REDUCED DYE BATHS

Richard L. Doerr, Orange, and Michael Scardera, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 860,539, Dec. 14, 1977, abandoned. This application Oct. 30, 1979, Ser. No. 89,684

Int. Cl.³ C09B *67/28, 7/00*

U.S. Cl. 8—650 **14 Claims**

1. In an aqueous sodium hydrosulfite composition for reducing vat or sulfur dye in an aqueous dye bath solution, comprising greater than about 10 percent by weight sodium dithionite, at least 1 percent sodium sulfite by weight of sodium dithionite, and stabilized by alkali metal hydroxide, the improvement characterized by including in said composition an effective surface crust inhibiting amount of an anionic surfactant selected from the group consisting of alkyl sulfates, alkyl aryl phosphate esters, N-acyl-N-alkyl taurates, α-olefin sulfonates, alkyl aryl disulfonates, dodecylated oxydibenzene sulfonates, and mixtures thereof, said effective surface crust inhibiting amount being in the range from about 0.002 to about 4.0 percent by weight of said sodium hydrosulfite composition.

4,285,696

DYESTUFFS DERIVED FROM TRIPHENYLMETHANE, THEIR PREPARATION AND USE

Gilbert V. H. Kremer, Ermont; Jacques P. E. Pechmeze, Paris, and Robert F. M. Sureau, Enghien les Bains, all of France, assignors to P C U K Produits Chimiques Ugine Kuhlmann, Courbevoie, France

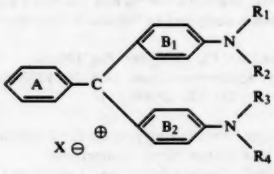
Continuation of Ser. No. 483,184, Jun. 25, 1974, abandoned. This application Mar. 21, 1977, Ser. No. 779,436

Claims priority, application France, Jul. 6, 1973, 73 24873

Int. Cl.³ C09B *11/10*

U.S. Cl. 8—654 **7 Claims**

1. Dyestuffs of the formula:



(I)

in which R_2 and R_4 which are the same or different each represent a hydrogen atom or an alkyl, hydroxyalkyl or cyanethyl group, one of the substituents R_1 and R_3 represents the 2,2,2-trifluoroethyl group and the other substituent represents an alkyl group or the 2,2,2-trifluoroethyl group, the ring A is unsubstituted by or substituted by one or 2 chlorine atoms or an alkoxy or alkyl group, the rings B_1 and B_2 are each unsubstituted or substituted by at least one alkyl or alkoxy group and X represnts a colourless monovalent anion.

4,285,697

FOOD SPOILAGE INDICATOR

Michael P. Neary, Apt. 934, 825 Calle Mejia, Santa Fe, N. Mex. 87501

Filed Sep. 26, 1978, Ser. No. 945,881

Int. Cl.³ G01N *33/02, 31/22;* **C09K** *3/34*

U.S. Cl. 23—230 LC **3 Claims**

1. In a food package, a food spoilage indicator comprising a liquid crystal disposed in a carrier of plastic tape, at least one portion of which is semi-permeable to gases generated in food spoilage, said liquid crystal being selected from the group consisting of cholesteryl or cholestanyl chloride, cholesteryl or cholestanyl bromide, cholesteryl or cholestanyl erucate, cholesteryl or cholestanyl olelyl carbonate, cholesteryl or cholestanyl erucyl carbonate, and cholesteryl or cholestanyl oleate.

4,285,698

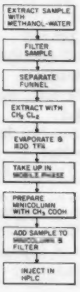
ANALYSIS OF AFLATOXINS IN PEANUTS BY HIGH PRESSURE LIQUID CHROMATOGRAPH

Susan E. Otto, Fenton, and David L. Dunmire, St. Louis, both of Mo., assignors to Peanut Research & Testing Laboratories, Inc., Edenton, N.C.

Filed Apr. 28, 1980, Ser. No. 144,681

Int. Cl.³ G01N *33/02, 31/08*

U.S. Cl. 23—230 B **8 Claims**



1. The method of analyzing peanuts and the like for the presence of aflatoxins, comprising the steps of

(a) grinding a quantity of said nuts into a paste,

(b) mixing said paste with a solution of methanol and water to form a slurry therefrom,

(c) filtering said slurry to extract a filtrate therefrom in the form of an aqueous solution,

(d) mixing said aqueous solution with a quantity of dichloromethane,

(e) extracting said dichloromethane from said aqueous solution to obtain an extract therefrom,

(f) evaporating the dichloromethane from said extract to obtain a first residue therefrom

(g) mixing said first residue with a quantity of trifluoracetic acid to form a derivative of said aflatoxins,

(h) evaporating said trifluoracetic acid to obtain a second residue therefrom,

(i) mixing said second residue with a solution of tetrahydrofuran and CH_3COOH to obtain a mobile phase therefrom,

(j) filtering said mobile phase through a minicolumn,

(k) injecting said mobile phase into a high pressure liquid

chromatograph to separate the aflatoxin components in said mobile phase, and,

(l) measuring the concentrations of each of said components.

4,285,699

ANALYTICAL METHOD AND APPARATUS FOR THE DETERMINATION OF TOTAL NITROGEN CONTENTS IN SAMPLES

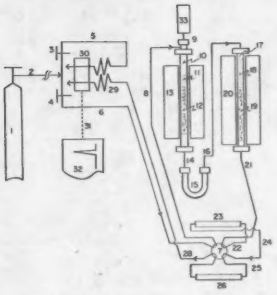
Tadamasa Itoh, Toyonaka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 16, 1980, Ser. No. 150,693

Claims priority, application Japan, May 23, 1979, 54-64473

Int. Cl.³ G01N *33/18, 27/18, 31/10, 31/12*

U.S. Cl. 23—230 PC **10 Claims**



1. An analytical method for the determination of total nitrogen contents in samples, which comprises passing an inert gas stream containing substantially no nitrogen through a first reaction tube which is packed with a decomposition catalyst and an oxidizing agent and is maintained at a temperature of 700° to 1100° C., a condenser, a second reaction tube which is packed with an oxidizing agent and a reducing agent and is maintained at a temperature of 400° to 800° C., a moisture-absorbing tube and a carbon dioxide gas-absorbing tube in this order, introducing a sample to be analyzed into the first reaction tube and sending nitrogen gas coming out of the carbon dioxide gas-absorbing tube to a nitrogen gas analyzer to determine the nitrogen gas.

4,285,700

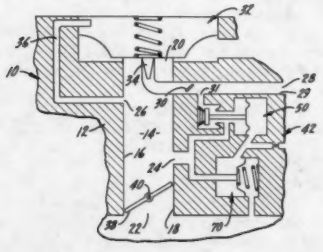
FUEL ENRICHMENT APPARATUS AND METHOD FOR GASEOUS FUEL MIXERS

Clarence D. Fox, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 27, 1979, Ser. No. 107,689

Int. Cl.³ F02M *21/04, 13/08, 25/00;* **B01F** *3/02*

U.S. Cl. 48—180 C **8 Claims**



1. A fuel enrichment apparatus in combination with a gaseous fuel carburetor having a body defining an air induction and mixing passage and including a main fuel supply passage communicable with said air induction and mixing passage, a movable fuel metering cone arranged and disposed with respect to said main fuel supply passage for metering fuel flow therethrough in response to pressure changes in said air induction and mixing passage, said air induction and mixing passage including a movable throttle member therein, and a vacuum control port downstream of said throttle, wherein

said fuel enrichment apparatus includes: means defining an auxiliary fuel inlet passage communicating with said main fuel supply passage,

means defining an auxiliary fuel port opening into said air induction and mixing passage upstream of said throttle member,

means defining an auxiliary fuel exit passage communcating with said auxiliary fuel port,

a normally closed auxiliary fuel valve assembly connected between said auxiliary fuel inlet passage and said auxiliary fuel exit passage, including

a pressure responsive valve operator engaging an expansion chamber motor having two chambers, one of said chambers communicating with said auxiliary fuel exit passage and arranged for opening said auxiliary fuel valve assembly in response to a predetermined subatmospheric pressure in said auxiliary fuel exit passage, and a restricted vent passage, in communication with the other of said chambers, and a normally closed control valve connected between said auxiliary fuel exit passage and said restricted vent passage, said control valve having an interior space and a diaphragm dividing said space into first and second chambers, wherein one of the chambers is in communication with said vacuum control port to effect movement of the diaphragm in response to a selected vacuum condition downstream of said throttle member so that the other of said chambers provides communication between the auxiliary fuel exit passage and the restricted vent passage.

4,285,701

METHOD FOR SEPARATING ISOTOPES USING A VORTEX TUBE

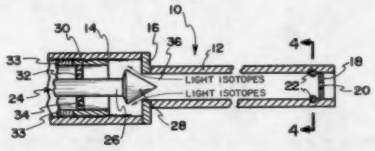
Ralph F. Schlenker, R.R. 4, Indianola, Iowa 50125

Continuation-in-part of Ser. No. 543,232, Jan. 23, 1975, Pat. No. 4,093,427. This application Jun. 5, 1978, Ser. No. 912,630

The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.

Int. Cl.³ B01D *57/00*

U.S. Cl. 55—17 **10 Claims**



1. A method for separating heavier from light isotopes, comprising:

introducing a gaseous feedstock mixture containing relatively light and relatively heavy isotopes under sufficient pressure and temperature into an elongated cylindrical vortex tube in a circumferential fashion so as to impart a swirling action of said mixture within said tube around the longitudinal axis thereof which tends to separate said mixture into a warmer outer stream enriched in lighter isotopes and a cooler inner stream enriched in heavier isotopes;

enhancing said thermodynamic separation by axially directing an electromagnetic beam along one stream to excite the vibrational mode of the minority isotope in one stream exclusive of the other ones in said one stream;

converting the electromagnetically caused excitation of the minority isotope remaining in said one stream to thermal

translation causing a further migration of the minority isotope into the other stream;

drawing off said outer stream of said thermodynamically separated swirling mixture adjacent the cylindrical walls of said tube through an outer opening spaced radially outwardly from the longitudinal axis of said tube;

drawings off the inner stream of said thermodynamically separated swirling mixture through an axial outlet located approximately along the longitudinal axis of said tube.

4,285,702

METHOD AND APPARATUS FOR THE RECOVERY OF WATER FROM ATMOSPHERIC AIR

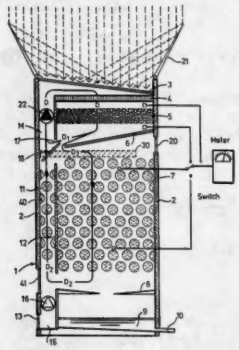
Helmut Michel, Esslingen-Sulzgries, and Wolfgang Bulang, Eichenau, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nuernberg AG, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,699

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810241

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—33 22 Claims



1. A method of recovering water from atmospheric air wherein during an adsorption phase, cool, humid air is transported through a water-adsorbent material for adsorption of water vapor therefrom and wherein during a desorption phase warmer, drier air is transported through said adsorbent material for pickup of water from said adsorbent material, said desorption phase comprising the steps of:

(a) generating a first air stream in a closed-loop path through a heater for heating said first air stream and thence to said adsorber material and back through heater,

(b) continuing step (a) for a predetermined time,

(c) generating a second air stream by diverting a portion of said first air stream for circulation from said adsorber material through a condenser for yielding water therefrom by condensation, and

(d) joining said second air stream to said first air stream after passage of said second air stream through said condenser,

whereby said second air stream may be heated by said heater and passed through said adsorbent material.

4,285,703

APPARATUS FOR CLEANING GAS

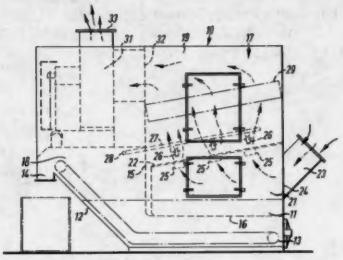
Robert O. Alexander, Mitcham, England, assignor to Cera International Limited, London, England

Continuation of Ser. No. 5,552, Jan. 22, 1979, abandoned. This application Apr. 4, 1980, Ser. No. 137,498

Claims priority, application United Kingdom, Jan. 23, 1978, 2703/78

Int. Cl.³ B01D *47/06*

U.S. Cl. 55—228 15 Claims



1. Apparatus for cleaning gas, comprising:

means for directing gas to be cleaned along a path through the apparatus;

a plurality of spaced cylindrical passages positioned in said path and substantially spaced apart from one another thereby substantially reducing the cross-sectional area thereof and correspondingly significantly increasing the velocity of gas flow therethrough, said passages being arranged such that the total flow of gas through the apparatus is divided among the cylindrical passages;

a plurality of spray nozzles positioned in said path and arranged in coaxial and longitudinally spaced relationship with respective ones of said passages, each nozzle being adapted to form a conical pattern of liquid spray which is directed within its respective passage, the divergence of each conical spray pattern and the radius of the associated cylindrical passage being such that the spray impinges on the cylindrical wall of the passage at a location axially spaced a substantial distance from an end of the passage adjacent the nozzle and rebounds therefrom to exit from the opposite end of said passage, with substantially no liquid flow through the passages in the direction of gas flow; and

means for supplying liquid to said nozzles.

4,285,704

APPARATUS FOR PURIFYING AIR

Georgy I. Zuzanov, ulitsa Vavilova, 93, kv. 39; Iosif S. Mironkin, Balaklavsky prospekt, 4, korpus 5, kv. 301; Jury N. Tsarik, 9 mikroraion Teplogo Stana, 2b, kv. 317; Natalia A. Alexandrova, 9 mikroraion Teplogo Stana, 2b, kv. 218; Sergei N. Kamensky, ulitsa Koshtoyantsa 5, kv. 17, and Evgeny N. Nevedomsky, Nagorny bulvar, 3, kv. 54, all of Moscow, U.S.S.R.

Filed Aug. 10, 1979, Ser. No. 65,548

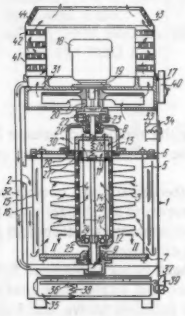
Claims priority, application U.S.S.R., Aug. 16, 1978, 2654709

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—274 7 Claims

1. An apparatus for separating solid impurities from a fluid, such as air, comprising: a housng, having inlet and outlet chambers, and having mounted thereon in said outlet chamber a spring-loaded plate valve constructed and arranged to admit atmospheric air to said outlet chamber of said housing as desired; a suction port provided in said inlet chamber of said housing for drawing in air; a plurality of perforated sleeves and a socket element including shaft means mounted at each end of said sleeves to form a rotatably mounted cylindrical hollow

sleeve, the upper socket having gas outlet means, and said cylindrical hollow sleeve being rotatably mounted and located in said inlet chamber of said housing; a plurality of filtered elements secured on said perforated sleeves and being mounted between upper and lower plates, having central openings and dividing said housing into said inlet and outlet chambers with the outlet chamber above said upper plate and said inlet chamber residing between said upper and lower plates; fan means including a pressure space and air outlet means disposed above said outlet chamber for drawing off air from within said perforated sleeves which are rotatably mounted between the central openings of said plates; an electric motor having a shaft for rotating said fan means; a cyclone having louvers for preliminary separation of the solid impurities and being positioned around said filter elements and between said filter elements and said housing in said inlet chamber; a centrifugal coupling including a driver element secured to the shaft of said electric



motor and a driven element connected to one of said socket elements and said centrifugal coupling constructed and arranged to intermittently effect an automatic rotatable connection of said plurality of perforated sleeves with said electric motor so that after said electric motor reaches its full rpm value, the driven element of said coupling is disconnected from the driver element of said centrifugal coupling, so that said plurality of filter elements remain stationary while said apparatus is drawing off contaminated air; and a receptacle at the bottom portion of said housing for storing impurities separated from the air by said apparatus, whereby the solid impurities in said air, upon first entering said suction port, and subsequently passing through said cyclone, said filtered elements and said perforated sleeves, are separated therefrom, and the cleaner air, exiting from said end of said perforated sleeve connected to said driven element, enters said outlet chamber and then said pressure space before exiting to the atmosphere.

4,285,705

APPARATUS FOR INFLUENCING THE BOUNDARY LAYERS AT WALLS

Hans-Joachim Niemann, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

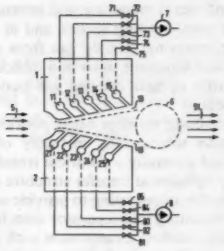
Filed Mar. 7, 1979, Ser. No. 18,230

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1978, 2810444

Int. Cl.³ B01D *51/08*

U.S. Cl. 55—277 **5 Claims**

1. Device for influencing boundary layers at walls of flow guidance equipment encasing a fluid flow comprising means defining collecting channels within the walls for controllably supplying and withdrawing fluid therewith, and means for



defining in the walls fine holes connected to said collecting channels.

4,285,706

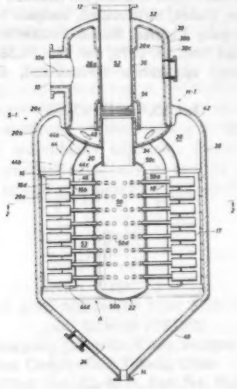
PARTICULATE FILTRATION DEVICE

Manfred F. Dehne, 14350 Chrisman Rd., Houston, Tex. 77039

Filed Mar. 20, 1979, Ser. No. 22,284

Int. Cl.³ B01D *45/12;* **B04C** *5/26*

U.S. Cl. 55—343 **12 Claims**



1. A particulate filtration system for receiving particulate laden gas and separating particulate from such particulate laden gas to produce a cleaned gas, comprising:

a vessel housing including an entry housing section and a main vessel section, said entry housing section having an inlet adapted to receive particulate laden gas and a cleaned gas outlet and said main vessel section having a particulate vessel outlet;

particulate laden gas transfer means mounted substantially in said main vessel section for transferring particulate laden gas from said entry section into said main vessel section, said particulate laden gas transfer means including a generally cylindrical transfer structure positioned substantially in said main vessel section, and mount means for mounting said generally cylindrical transfer structure within said main vessel section depending from and in fluid communication with said entry housing section for receiving particulate laden gas flowing into said entry housing section;

a separator assembly positioned in said main vessel section and including a plurality of separator units for separating received particulate laden gas into particulate and cleaned gas, each separator unit including an inlet adapted to

receive particulate laden gas and a particulate outlet and a cleaned gas outlet;

cleaned gas transfer means including a generally cylindrical internal housing member;

internal mount means mounting said internal housing member in said entry housing section and in said main vessel section for receiving cleaned gas from said cleaned gas outlets of said separator units and directing said cleaned gas outwardly of said cleaned gas outlet of said entry housing section;

said internal housing member being positioned in said main vessel section substantially inwardly of said separator units and said generally cylindrical transfer structure;

said generally cylindrical transfer structure and said internal housing member cooperating to provide separator support means for mounting said separator units in a circumferential, vertically stacked arrangement with the inlets of said separator units being in fluid communication with said particulate laden gas transfer means and the cleaned gas outlets of said separator units being in fluid communication with said internal housing member; and,

particulate transfer means mounted in said main vessel section for transferring particulate from said particulate outlets of said separator units to said main vessel section particulate outlet.

4,285,707

DUST SEPARATOR FOR SEPARATING DUST FROM FLOWING GASEOUS MEDIA

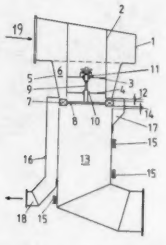
Hans Pfenninger, Baden, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Nov. 21, 1979, Ser. No. 96,332

Claims priority, application Switzerland, Dec. 1, 1978, 12297/78

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—396 **2 Claims**



2. A dust separator for separating particles from a flowing gaseous media, said separator comprising:

a main flow conduit for conducting the gaseous media,

means for imparting a swirling motion to the gaseous media within said main conduit;

a freely-rotating turbine wheel arranged at an outlet of said main conduit, said wheel including blades on the periphery thereof which are acted upon by air from said main conduit to rotate the turbine wheel;

an outlet conduit disposed downstream of said turbine wheel; and

an annular channel surrounding said turbine wheel, said channel communicating with said main conduit by means of a first gap situated between the outlet of said main conduit and the inlet of said turbine wheel, and communicating with said outlet conduit by means of a second gap situated between the outlet of said turbine wheel and an inlet of said outlet conduit;

said turbine wheel being mounted in an adjustable bearing defining means for adjusting said first gap, said outlet conduit being movable to enable said second gap to be adjusted.

4,285,708

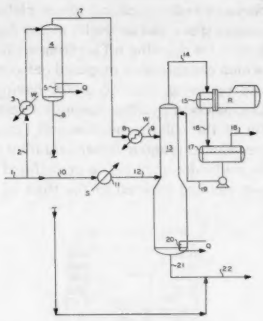
DE-ETHANIZING MEANS

Leo L. Politte, and Stone P. Washer, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Aug. 10, 1979, Ser. No. 65,500

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—28 **9 Claims**



1. A method for the removal of ethane from a feedstream comprising methane, ethane and higher components which comprises:

(a) dividing the feedstream into two streams,

(b) passing one stream to a stabilizer zone to thereby remove the heavier components as bottom and passing the second stream to a de-ethanizer,

(c) feeding overhead vapor as obtained from the stabilizer to the de-ethanizer and introducing said vapors to the de-ethanizer in a location above the location said second stream is introduced,

(d) combining the bottoms of the de-ethanizer with the bottoms of the stabilizer at a location outside the de-ethanizer and outside the stabilizer and removing said combined bottoms as de-ethanized product.

4,285,709

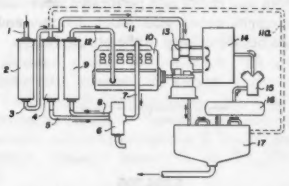
LIQUEFACTOR

Anker Gram, North Vancouver, Canada, assignor to Cleanair Combustion Systems, Ltd., North Vancouver, Canada

Continuation of Ser. No. 838,195, Sep. 30, 1977, abandoned. This application May 31, 1979, Ser. No. 44,245

Int. Cl.³ F25J *3/00*

U.S. Cl. 62—36 **19 Claims**



1. An apparatus for purifying and liquifying natural gas comprising:

a plurality of molecular sieve assemblies for purifying the gas;

means for liquifying the gas comprising a compressor powered by a motor fueled by a portion of the natural gas;

a heat exchanger for heating the portion of the natural gas with exhaust gases from the motor; and

means for periodically changing modes of operation of the sieve assemblies so a first sieve assembly operates on a gas cleaning mode, wherein the natural gas passes through the

first sieve assembly to the means for liquifying, and a second sieve assembly is regenerated during a heating mode, wherein the portion of the gas from the heat exchanger passes through the second sieve assembly to heat the second sieve assembly and purge accumulated impurities, and a cooling mode, wherein the portion of gas flowing to the heat exchanger passes through the second sieve assembly to cool the second sieve assembly;

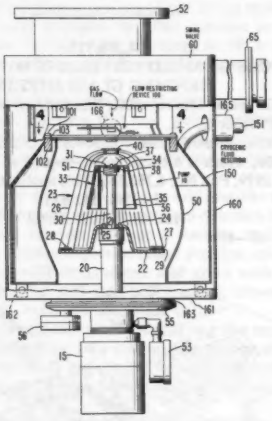
each sieve assembly comprising a plurality of passes each of which has a cross-sectional area which is less than that of the entire sieve assembly to increase the velocity of the portion of gas passing through the sieve assembly so that the portion of gas for fueling the motor is sufficient to regenerate the sieve assemblies.

4,285,710

CRYOGENIC DEVICE FOR RESTRICTING THE PUMPING SPEED OF SELECTED GASES

Kimo M. Welch, Mountain View, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 18, 1978, Ser. No. 943,276
Int. Cl.³ F25J *1/02*
U.S. Cl. 62—40 **10 Claims**



1. Apparatus for removing a first gas from a chamber at a pumping speed which can be varied over a substantial range while removing a second gas from the chamber at a relatively more constant speed, said apparatus comprising conduit means forming a gas flow path and having an inlet opening adapted to communicate with the chamber from which gas is to be pumped, flow restricting means within said conduit means and exposed to gas entering said inlet opening, pumping means for pumping gas which passes through said restricting means, said restricting means being positioned between said pumping means and said inlet opening;

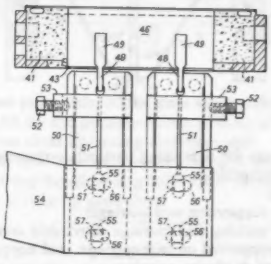
said restricting means comprising stationary wall means positioned across said gas flow path and having solid portions and apertured areas, movable closure means having a plurality of closure segments positioned adjacent said stationary wall means, means for moving said segments toward and away from a position in which said segments cooperate with said stationary solid portions to substantially prevent gas flow through said restricting means, cooling means, structural connecting means interconnecting said stationary wall means and said cooling means and forming a high thermal conductivity path between said stationary wall means and said cooling means, said structural interconnecting means being distinct from said conduit means, and said movable closure means being connected to said stationary wall means by structural connecting means which are distinct from said conduit means.

4,285,711

METHOD AND APPARATUS FOR THE PRODUCTION OF GLASS FIBRES

John H. Willis, 501 Drayton Cir., Anderson, S.C. 29621

Filed Feb. 6, 1980, Ser. No. 118,883
Int. Cl.³ C03B *37/00*
U.S. Cl. 65—1 **5 Claims**



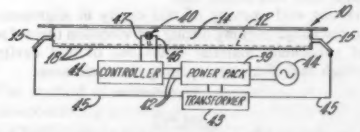
1. In an apparatus for producing glass fibres by flowing a plurality of streams of molten glass through an electrically-heated bushing comprising a metal plate with a plurality of orifices therein, together with means for flowing an electric current through said plate to heat it, the improvement wherein the bushing is provided with at least two electrical terminals spaced apart widthwise of the bushing at each end thereof, together with individually adjustable connector means for each of said terminals, whereby in use the current flowing through each of said terminals is independently adjustable.

4,285,712

APPARATUS AND METHOD FOR THE PRODUCTION OF GLASS FIBERS

Thomas K. Thompson, Granville, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Oct. 22, 1979, Ser. No. 86,924
Int. Cl.³ C03B *37/02*
U.S. Cl. 65—2 **16 Claims**



1. Method of producing glass fibers from an electrically heated bushing having a bottom wall with an orifice section for delivery of glass streams for attenuation into fibers comprising:

a. attaching a temperature sensing means to the bushing bottom wall in the orifice area;

b. sensing the temperature at the orifice section;

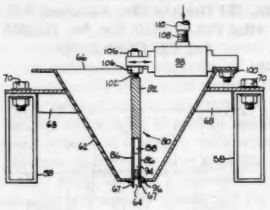
c. supplying a signal that varies in response to the sensed temperature; and

d. indicating that a disruption in fiber production has occurred when the supplied signal is outside a predetermined range.

4,285,713
METHOD AND APPARATUS FOR FEEDING BATCH MATERIAL

James E. Wilkuski, Evergreen, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Jan. 14, 1980, Ser. No. 112,017
Int. Cl.[3] C03B 3/00
U.S. Cl. 65—27 17 Claims



1. Apparatus for depositing particulate material over a desired area, comprising:
a carriage;
means for supporting said carriage;
means for moving said carriage above said area;
a hopper supported on said carriage, said hopper having an elongated discharge opening;
feed means disposed within said hopper;
said feed means having a cavity adjacent one end thereof;
said cavity having an opening in alignment with said elongated discharge opening;
said feed means having a plurality of perforations opening into said cavity from each side thereof;
means connected to the other end of said feed means for vibrating said feed means to cause particulate material to flow through said perforations into said cavity; and
means for maintaining said opening of said cavity in alignment with said elongated discharge opening so that particulate material flowing into said cavity will flow out of said elongated discharge opening.

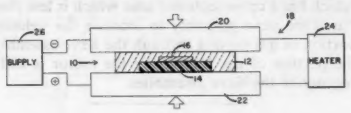
16. A method for depositing particulate material over a desired area, comprising:
supporting a carriage above said area;
supporting a hopper having a discharge opening upon said carriage;
filling said hopper with particulate material;
moving said carriage over said area;
providing said hopper with a feed means having a cavity therein;
mounting said feed meanns so that an opening of said cavity is in alignment with said discharge opening;
vibrating said feed means to flow particulate material in said hopper into said cavity; and
maintaining said opening of said cavity in alignment with said discharge opening during the vibration thereof so that said particulate material flows out of said cavity and through said discharge opening onto said area.

4,285,714
ELECTROSTATIC BONDING USING EXTERNALLY APPLIED PRESSURE

Allen R. Kirkpatrick, Lexington, Mass., assignor to Spire Corporation, Bedford, Mass.

Continuation of Ser. No. 967,165, Dec. 7, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,560
Int. Cl.[3] C03B 23/20; C03C 29/00
U.S. Cl. 65—40 12 Claims

5. A method for fabricating an electrostatically bonded laminated structure comprising the steps of:
(a) superimposing a first stratum and a second stratum to form a layered structure, said first stratum being composed of a vitreous material and said second stratum being a conductor, semiconductor or a dielectric stratum, at least a portion of a surface of said first stratum in contact with at least a portion of a surface of said second stratum;
(b) heating said layered structure to a temperature at which said vitreous material deforms;
(c) exerting a pressure on said layered structure, said first stratum pressed against said second stratum, said surface of said first stratum molded by and conforming to said

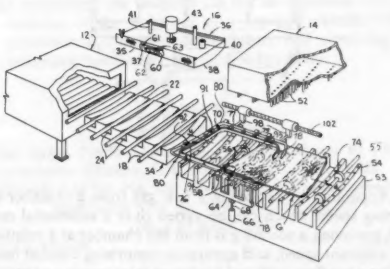


surface of said second stratum due to deformation of said vitreous stratum at said temperature and pressure, said surface of said first stratum molded into a surface which is complementary to said surface of said second stratum, whereby said contacting surfaces are in full contact with one another; and
(d) applying a voltage potential across said layered structure to form an electrostatically bonded, laminated structure.

4,285,715
CYCLE OF MOLD MOVEMENT WHILE PRESS BENDING GLASS SHEETS

Robert G. Frank, Murraysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 954,697, Oct. 25, 1978, Pat. No. 4,187,095, which is a continuation-in-part of Ser. No. 78,626, Sep. 25, 1979, Pat. No. 4,252,552. This application Jan. 11, 1980, Ser. No. 111,511
Int. Cl.[3] C03B 23/03
U.S. Cl. 65—106 19 Claims



1. In the art of shaping glass sheets wherein a heat-softened glass sheet is delivered into a shaping station along a given path of travel, is lifted from said path of travel toward a downwardly facing shaping surface of a vacuum mold and transferred by suction onto said vacuum mold, the improvement comprising maintaining said vacuum mold in a parking position at an elevation not exceeding three thicknesses of said glass sheet above said given path, yet sufficiently high to permit said glass sheet to be delivered to a position beneath said vacuum mold along said given path of travel; lifting said heat-softened glass sheet toward said vacuum mold on a lifting mold having an upwardly facing shaping surface when said glass sheet arrives at said shaping station; simultaneously applying suction to said vacuum mold while starting to lift said lifting mold toward said vacuum mold until said lifted glass sheet is supported against and shaped to conform to said downwardly facing shaping surface; lowering said lifting mold from said vacuum mold when said glass sheet is transferred to said vacuum mold and lifting said vacuum mold a sufficient distance to

allow entry of a ring-like member into said shaping station beneath said vacuum mold and above said given path.

9. Apparatus for shaping a glass sheet comprising a conveyor defining a given path of travel, a furnace for heating said glass sheet to its deformation temperature, a shaping station located downstream of said furnace, said conveyor extending through said furnace and into said shaping station and a cooling station located immediately downstream of said shaping station;

said shaping station comprising a lower lifting mold having an upwardly facing shaping surface, means for moving said lifting mold between a lowered position wherein said upwardly facing shaping surface is located immediately beneath said given path of travel and a lifted position wherein said upwardly facing shaping surface is located immediately above said given path of travel, an upper vacuum mold having a downwardly facing shaping surface that is apertured for drawing suction through the apertures of said shaping surface, and means for moving said upper vacuum mold between a parking position wherein its downwardly facing shaping surface is spaced above said given path of travel by a minimum distance greater than the thickness of said glass sheet and a maximum distance greater than the thickness of said glass sheet and a maximum distance sufficiently closely above said upwardly facing shaping surface of said lifting mold when said lifting mold occupies its lifted position to enable suction drawn through said apertures to lift said glass sheet by suction from said lifting mold and a raised position;

means to control the application of suction through said apertures from the time that said lifting mold starts to move upwardly from its lowered position until after said upper vacuum mold moves upwardly to said raised position;

a ring-like member and means to move said ring-like member from said cooling station in an upstream direction into said shaping station beneath said upper vacuum mold when said vacuum mold occupies its raised position, said raised position being sufficiently above said given path to provide clearance for said ring-like member between said upper vacuum mold and said given path;

means to control said movement of said ring-like member in an upstream direction into said cooling station until said upper vacuum mold has moved upward into said raised position and said lower, lifting mold is not above said given path;

means to control the application of said suction through said downwardly facing shaping surface of said upper vacuum mold until such time as said ring-like member is below said upper vacuum mold; and

means synchronized with the stopping of said suction application to move said ring-like member in a downstream direction into said cooling station and to lower said lifting mold to its lowered position, and, when said ring-like member clears said shaping station, to lower said upper vacuum mold to its parking position to await the arrival of a succeeding glass sheet from said furnace.

4,285,716

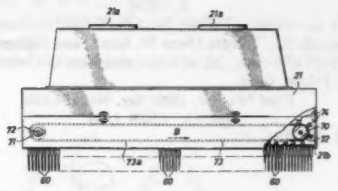
METHOD OF QUENCHING GLASS SHEETS

Seiichiro Honjo, Muko; Masaaki Ijichi, Kyoto; Hiroaki Masunaga, Nagaokakyo, and Keiji Hara, Joyo, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Jul. 16, 1979, Ser. No. 57,561
Claims priority, application Japan, Jul. 14, 1978, 53-85177
Int. Cl.³ C03B *27/04*
U.S. Cl. 65—114 **5 Claims**

1. A method of quenching glass sheets characterized in that a heated glass sheet is moved through a quenching section, is blown with air in some portions from a plurality of nozzles during said movement so as to provide rapidly cooled portions and uncooled portions;

wherein the air is intermittently jetted out of nozzles arranged as opposed to the entire glass sheet moving area in said quenching section, and the air jetting nozzles through which the air is jetted out are opened and closed in turn by advancing baffles so as to coincide with the moving speed and moving direction of said glass sheet by synchronizing said intermittent jetting of air with the movement of said



glass sheet to provide, on the glass sheet surface, portions blown with air and portions blown with no air alternately in the glass sheet advancing direction; and

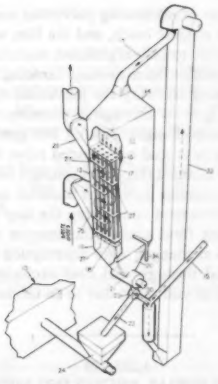
wherein the synchronizing of the jetting is provided by a chain driving the advancing baffles and running in unison with the advancing glass sheet.

4,285,717

METHOD OF INITIATING OPERATION OF TUBULAR HEAT EXCHANGER FOR PREHEATING PULVEROUS GLASS BATCH

John D. Novak, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 19, 1980, Ser. No. 150,855
Int. Cl.³ C03B *3/00*
U.S. Cl. 65—134 **10 Claims**



1. The method of initiating the preheating of a pulverous, moisture-containing material such as glass batch, and the like, within a tubular heat exchanger prior to delivery of such material in preheated condition to a melting furnace comprising the steps of introducing the fully-intermixed, pulverous material into the upper region of a tubular heat exchanger, allowing the pulverous material to flow downwardly by gravity thorugh a plurality of open-ended tubes of said heat exchanger, passing the hot waste gases of the melting furnace through said heat exchanger around said open-ended tubes to heat the pulverous material contained therein by indirect heat transfer, recirculating all of the pulverous material rapidly through the tubes of said heat exchanger during start-up while the said pulverous material is heated by contact with the tube inner surfaces, said material being recycled at a substantially-faster flow rate than

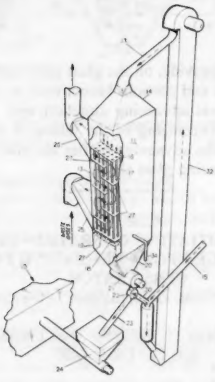
when the heat exchanger is subsequently continuously operated to preheat the pulverous material for delivery to said melting furnace.

4,285,718

METHOD OF OPERATING TUBULAR HEAT EXCHANGER FOR PREHEATING PULVEROUS GLASS BATCH

Richard G. Mathias, Toledo; John D. Novak, Sylvania; Robert R. Rough, Sr., Toledo; Owen M. Small, and Sigmund Willinger, both of Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 30, 1980, Ser. No. 154,690
Int. Cl.³ C03B *3/00*
U.S. Cl. 65—134 **6 Claims**



1. In the process of preheating pulverous moisture-containing material such as glass batch, and the like, within a tubular heat exchanger prior to delivery of such material in preheated, moisture-free condition to a melting furnace, which process includes the steps of allowing the pulverous material to flow downwardly by gravity through a plurality of open-ended tubes of said heat exchanger, passing hot gases through said heat exchanger around said open-ended tubes to heat the pulverous material contained therein by indirect heat transfer, and delivering the preheated pulverous material into the melting furnace, the improvement comprising the step of immediately directing a cooling fluid against the exterior surfaces of the tubes of said heat exchanger upon interruption of flow of said pulverous material through said heat exchanger in order to prevent pluggage of said tubes due to an increased coefficient of friction.

4,285,719

ORGANIC MATERIAL RECYCLING METHOD AND DEVICE

Jeremy F. Criss, 5308 Emerald Dr., Sykesville, Md. 21784

Continuation-in-part of Ser. No. 878,162, Feb. 15, 1978, abandoned. This application Dec. 31, 1979, Ser. No. 108,551
Int. Cl.³ C05F *3/04, 9/04*
U.S. Cl. 71—13 **3 Claims**

1. A continuous process for converting human wastes and cellulosic material into a non-odiferous soil-like composted material, to provide means for disposing large quantities of these materials without polluting the environment, comprising the steps of:

(a) depositing human and liquid wastes in a first chamber;

(b) depositing water into said first chamber to dilute said human wastes and to clean the surfaces of said first chamber;

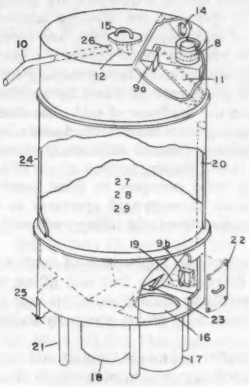
(c) providing a second chamber, said second chamber being connected to said first chamber by valved conduit means;

(d) filling said second chamber from about 1/10 to about ½ full with cellulosic material or with a mixture of cellulosic material and topsoil, the volume ratio of cellulosic material and topsoil being from about 6:1 to about 1:1 when a mixture of cellulosic material and topsoil is used;

(e) seeding earth worms into said cellulosic material or said mixture of cellulosic material and topsoil in said second chamber;

(f) transferring said human wastes, diluted in step (b), from said first chamber to said second chamber, said wastes being transferred through said valved conduit means by differential pressure;

(g) periodically depositing a layer of cellulosic material on



top of the diluted human waste transferred to said second chamber, the volume ratio of said layer of cellulosic material ranging from about 1:2 to about 3:1 relative to the volume of said diluted human wastes;

(h) selectively exposing the contents of said second chamber to warm natural air convection at a temperature from about 50° F. to 100° F. and a humidity of from about 30 to about 100%, except when said transferring step (f) is in progress;

(i) draining excess liquid, if any, from said second chamber;

(j) allowing the earth worm hatching cycle and rebirth to proceed in said second chamber; and

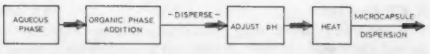
(k) periodically removing from the lower portion of said second chamber a soil-like material comprised of worm-reacted human waste, water, cellulosic material, worm capsules, worms and worm castings.

4,285,720

ENCAPSULATION PROCESS AND CAPSULES PRODUCED THEREBY

Herbert B. Scher, Moraga, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 323,171, Jan. 12, 1973, abandoned, which is a continuation-in-part of Ser. No. 234,793, Mar. 15, 1972, abandoned. This application Jul. 7, 1978, Ser. No. 922,473
Int. Cl.³ A01N *25/28, 43/00;* B01J *13/02*
U.S. Cl. 71—88 **106 Claims**



1. A process of encapsulating water-immiscible material within discrete capsules of polyurea without addition of a second reactant, whereby hydrolysis of an isocyanate mono-

mer to form an amine takes place which in turn reacts with another isocyanate monomer to form polyurea, which comprises the steps:

(a) providing, at room temperature, a dispersion of (i) a water-immiscible phase comprising the water-immiscible material to be encapsulated and an organic polyisocyanate in (ii) an aqueous phase comprising a solution of water, a surfactant and a protective colloid; and

(b) heating and maintaining said dispersion in a temperature range of about 40° C. to about 90° C.; whereupon said water-immiscible material is encapsulated within discrete polyurea capsular enclosures directly usable without further separation or purification.

23. Capsules capable of controlled release of encapsulated organic material comprising a thiocarbamate herbicide enclosed in a polyurea microcapsule produced by the process of claim 1.

4,285,721
METHOD OF INCREASING THE YIELDS OF SUGAR OBTAINED FROM SUGARCANE

Sidney B. Richter, Fairlawn, Ohio, assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Oct. 5, 1979, Ser. No. 82,197
Int. Cl.³ A01N *43/08*
U.S. Cl. 71—88 **2 Claims**

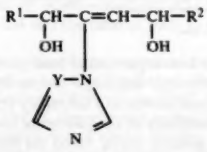
1. A method for increasing the recoverable sugar in sugarcane which comprises contacting the sugarcane with an effective amount of furfuryl 2-methoxy-3,6-dichlorobenzoate during the period of from about 2 to about 10 weeks before harvest.

4,285,722
IMIDAZOLYL AND TRIAZOLYL COMPOUNDS, COMPOSITIONS CONTAINING THEM AND METHODS OF USING THEM AS PLANT FUNGICIDAL AND GROWTH REGULATING AGENTS

Paul A. Worthington, and Keith P. Parry, both of Maidenhead, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 4, 1979, Ser. No. 36,163
Claims priority, application United Kingdom, May 11, 1978, 18981/78; May 11, 1978, 18982/78
Int. Cl.³ C07D *233/54, 249/08*
U.S. Cl. 71—92 **8 Claims**

1. A compound of general formula (I)



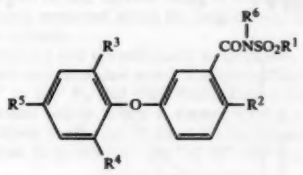
wherein each of R^1 and R^2, which may be the same or different, is unsubstituted or methyl-substituted C_{3-6} cycloalkyl, unsubstituted or halo-substituted C_{1-6} alkyl or unsubstituted or halo-, C_{1-4} alkyl-, C_{1-4} alkoxy-, phenyl- or nitro-substituted phenyl, and Y is =N— or =CH—; or a fungicidal or plant growth regulating acid addition salt or metal complex thereof wherein said salt is a salt of hydrochloric acid, nitric acid, sulphuric acid, acetic acid, p-toluene sulphonic acid or oxalic acid and said complex is prepared by reacting the uncomplexed compound of formula (I) with a metal salt in a suitable solvent.

4,285,723
SELECTIVE HERBICIDES

David Cartwright, Reading, and David J. Collins, Crowthorne, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 642, Jan. 2, 1979, abandoned. This application Jul. 12, 1979, Ser. No. 57,005
Claims priority, application United Kingdom, Jan. 19, 1978, 2237/78; May 30, 1978, 23772/78
Int. Cl.³ A01N *41/06*; C07C *143/74, 143/78*
U.S. Cl. 71—103 **9 Claims**

1. Herbicidal diphenyl ether compounds of the formula (I)



(I)

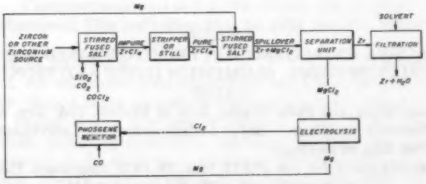
and salts thereof,

wherein R^1 is an alkyl group of 1 to 6 carbon atoms optionally substituted by one or more fluorine atoms, or by a phenyl group optionally substituted by one or more halogen atoms; R^2 is a hydrogen atom, a fluorine, chlorine, bromine, or iodine atom, or a nitro group; R^3 is a hydrogen atom, a fluorine, chlorine, bromine, or iodine atom, an alkyl group of 1 to 6 carbon atoms, a trifluoromethyl group, or a cyano group; R^4 is a hydrogen atom, a fluorine, chlorine, bromine, or iodine atom, or a trifluoromethyl group; R^5 is a fluorine, chlorine, bromine, or iodine atom or a trifluoromethyl group; and R^6 is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms.

4,285,724
CONTINUOUS PRODUCTION OF FINELY DIVIDED ZIRCONIUM POWDER

Aaron J. Becker, Monroeville, and Don R. Careatti, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 15, 1979, Ser. No. 94,654
Int. Cl.³ C22B *34/14*
U.S. Cl. 75—84.4 **12 Claims**



1. A process for production of finely divided Zr powder by reaction of $ZrCl_4$ with Mg, comprising the steps of

(a) providing a molten salt bath comprising about 5 to 95 mole % $ZrCl_4$, about 0 to 45 mole % $MgCl_2$, and the remainder KCl, NaCl or mixtures of KCl and NaCl;

(b) maintaining the bath at a temperature greater than the solidus temperature of the bath and less than the melting point of Mg, said temperature being about 540° to 649° C.;

(c) feeding gaseous $ZrCl_4$ to a lower portion of the bath;

(d) reacting the $ZrCl_4$ with solid Mg to form $MgCl_2$ and Zr powder; and

(e) separating the Zr powder from the bath.

4,285,725
NON-MAGNETIZABLE STEEL CASTING ALLOY, ITS USE AND PROCESS OF MANUFACTURE

Walter Gysel, Schaffhausen, Switzerland, and Adolf Trautwein, Gottmadingen, Fed. Rep. of Germany, assignors to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

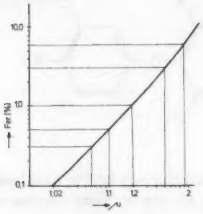
PCT No. PCT/CH78/00040, §371 Date Jul. 30, 1979, §102(e), Date Jul. 23, 1979, PCT Pub. No. WO79/00328, PCT Pub. Date Jun. 14, 1979.

This PCT application filed Nov. 24, 1978, Ser. No. 118,805

Claims priority, application Switzerland, Nov. 30, 1977, 14647/77; Jan. 24, 1978, 726/78

Int. Cl.³ C22C *39/20*

U.S. Cl. 75—128 A **4 Claims**



1. A non-magnetizable steel alloy cast in its final form having the composition

C	max. 0.30%
Si	max. 2.00%
Mn	4.00–20.00%
Cr	10.00–20.00%
Ni	4.00–12.00%
Mo	max. 3.00%
N_2	0.02–0.20%

with the remainder being iron, having magnetic permeability $\mu \leqq 1.20$, in large solidification cross sections in the range of 100 to 500 mm in the residual solidification zone, a CrNiMn equivalence factor: $f = 6.5 - \%Cr - 0.4 \cdot \%Ni + 0.1$ wt.%Mn $+ 0.075$ wt.%Cr·%Ni $+ 0.013 \cdot \%Cr \cdot \%Mn - 0.02 \cdot \%Ni \cdot \%Mn$, wherein f is between -2.5 and -1.5.

4,285,726
ACTIVE ANTI-CORROSION PIGMENTS BASED ON CALCIUM OXIDE, ALUMINIUM OXIDE AND IRON OXIDE

Franz Hund, and Peter Kresse, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 21,873, Mar. 19, 1979, abandoned. This application Jul. 10, 1980, Ser. No. 168,221

Claims priority, application Fed. Rep. of Germany, Apr. 8, 1978, 2815306

Int. Cl.³ C09C *1/00, 1/22*

U.S. Cl. 106—14.05 **14 Claims**

1. An anti-corrosion pigment consisting essentially of about 25.0 to 2.5 mole % of CaO and about 75.0 to 97.5 mole % of Me_2O_3, wherein Me_2O_3 is $(1-x)$ Al_2O_3 and x Fe_2O_3, x is from 0 to 1 and up to about 25 mole % of the Fe_2O_3 may be replaced by the corresponding quantity of Mn_2O_3, and having a specific surface area according to BET of about 0.1 to 200 m^2/g and a percentage weight loss per gram of pigment, as determined by the Thompson corrosion test, of less than about 0.05% per gram of pigment.

4,285,727
INK COMPOSITIONS FOR INK JET RECODING

Masafumi Uehara, and Mitsuyoshi Itano, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,609

Claims priority, application Japan, Dec. 18, 1978, 53-158074

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—22 **12 Claims**

1. An ink composition for ink jet recording which consists essentially of an aqueous medium, 0.5 to 8% by weight of a water-soluble acid or direct dye, 45 to 70% by weight of a polyhydric alcohol having 2 to 6 carbon atoms, and an amount of potassium carbonate effective to improve the storability of said composition.

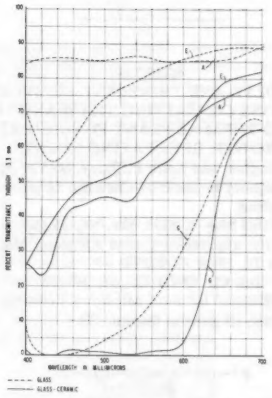
4,285,728
METHOD OF MAKING LOW EXPANSION CRYSTALLIZED GLASS-CERAMICS AND TELESCOPE MIRROR BLANKS MADE THEREBY

Clarence L. Babcock, Toledo; Robert A. Busdiecker, Woodville, and Erwin C. Hagedorn, Oregon, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 547,690, Feb. 6, 1975, Pat. No. 4,192,688, which is a continuation of Ser. No. 533,575, Dec. 17, 1974, abandoned, which is a continuation of Ser. No. 269,667, Jul. 7, 1972, abandoned, which is a division of Ser. No. 70,500, Sep. 8, 1970, Pat. No. 3,788,865, which is a continuation of Ser. No. 464,147, Jun. 15, 1965, abandoned, which is a continuation-in-part of Ser. No. 386,693, Jul. 31, 1964, abandoned. This application Oct. 9, 1979, Ser. No. 83,061

Int. Cl.³ C03C *3/22, 3/04, 3/20*; C03B *32/00*

U.S. Cl. 106—39.7 **11 Claims**



1. A transparent low-expansion at least partially crystalline non-porous glass-ceramic telescope mirror blank formed by thermal in situ crystallization of a thermally crystallizable base glass consisting essentially of the following components in the indicated weight percent limits, based on the total composition:

Component	Weight Percent
SiO_2	56–70
Al_2O_3	18–27
Li_2O	3.4–4.5
CaO	0–3
ZnO	0–2
B_2O_3	0–4
TiO_2	0–6
ZrO_2	0–3

-continued

Component	Weight Percent
MgO	0–3
Na_2O	0–1
P_2O_5	0–3
$(SiO_2 + Al_2O_3)$	at least 82
$(SiO_2 + Al_2O_3 + B_2O_3 + P_2O_5)$	86–91
$(CaO + MgO + ZnO + Na_2O)$	2.5–6
$(SiO_2 + Al_2O_3 + P_2O_5 + Li_2O)$	no more than 93
$TiO_2 + ZrO_2$	2–6

wherein the ratio of $(CaO+MgO+ZnO+Na_2O+B_2O_3)$ to Li_2O is less than 2.4 and the ratio of SiO_2 to Al_2O_3 is no more than 3.8 said transparent crystallized glass-ceramic containing as predominant crystalline species lithium-containing crystalline phases selected from the group consisting of beta-eucryptite, beta-spodumene, and mixtures thereof, said glass-ceramic containing a multiple of such crystalline species in random orientation throughout said glass-ceramic and dispersed in a glassy matrix remaining as a result of said in situ crystallization, substantially all of the crystals of said glass-ceramic being of a diameter less than ½ micron measured across the largest lineal dimension of the crystals, said transparent crystallized glass-ceramic having a coefficient of thermal lineal expansion within the range of from 10×10^{-7} to minus 10×10^{-7} over the temperature range of from 0°–300° C.

5. A method of making an at least partially crystalline, non-porous transparent glass-ceramic article having a substantial thickness of at least one-half inch and having a substantially uniform coefficient of thermal expansion within the range of -10 to 10×10^{-7} per ° C. (0°–300° C.) inch comprises:

making a thermally crystallizable glass melt having a composition consisting essentially of the following components present in the glass in the following weight percent ranges:

Component	Weight Percent
SiO_2	56–70
Al_2O_3	18–27
Li_2O	3.4–4.5
CaO	0–3
ZnO	0–2
B_2O_3	0–4
TiO_2	0–6
ZrO_2	0–3
MgO	0–3
Na_2O	0–1
P_2O_5	0–3
$(SiO_2 + Al_2O_3)$	at least 82
$(SiO_2 + Al_2O_3 + B_2O_3 + P_2O_5)$	86–91
$(CaO + MgO + ZnO + Na_2O)$	2.5–6
$(SiO_2 + Al_2O_3 + P_2O_5 + Li_2O)$	no more than 93
$TiO_2 + ZrO_2$	2–6

wherein the ratio of $(CaO+MgO+ZnO+Na_2O+B_2O_3)$ to Li_2O is less than 2.4 and the ratio of SiO_2 to Al_2O_3 is no more than 3.8,

forming a glass article of predetermined size and shape from said glass melt, subjecting the shaped glass to a nucleation temperature range of from minus 30° F. below the annealing point to 250° F. above the annealing point of said glass to form a multiplicity of nuclei therein,

and thereafter subjecting said nucleated glass to an increased temperature for a sufficient period of time to promote in situ crystallization of said glass article the temperature at the outer surface of said thick article being higher than the temperature at the inner portion of said article, maintaining said article at said temperature until the temperature of the inner portion of said article has substantially increased,

decreasing the temperature of the outer surface of said thick article until it is relatively cooler than the inner portion of said article,

then continuously repeating the cycle of heating the outer portion of the article to a temperature greater than the inner portion of the article and subsequently decreasing the temperature of the outer surface to a temperature cooler than the inner portion of said article until a partially crystalline, non-porous, transparent glass-ceramic article is formed containing as predominant crystalline species lithiumcontaining crystalline phases selected from the group consisting of beta eucryptite, beta spodumene, and mixtures thereof,

said glass-ceramic containing a multitude of such crystalline species in random orientation throughout said glass-ceramic and dispersed in a glassy matrix remaining as a result of said in situ crystallization, substantially all of the crystals of said ceramic being of a diameter less than ½ micron measured across the largest lineal dimensional of the crystals,

wherein the said crystallization temperatures to which said thick nucleated glass article is subjected can vary by about 50° to 100° F., said thick tramsparent crystallized glass-ceramic article which is formed having a substantially uniform coefficient of lineal thermal expansion of from minus 10 to 10×10^{-7} per ° C. (0°–300° C.).

4,285,729
DENSE CROWN OPTICAL GLASS

Shizuo Matsumaru, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 7, 1979, Ser. No. 101,227
Claims priority, application Japan, Dec. 14, 1978, 53-153623
Int. Cl.³ C03C *3/08, 3/10*
U.S. Cl. 106—47 Q **2 Claims**

1. Dense crown optical glass having excellent chemical durability, a refractive index nd in the range of 1.610–1.625 and an Abbe number νd in the range of 57–61, consisting essentially of, in percent by weight:

SiO_2	26.12
B_2O_3	25.86
BaO	30.52
CaO	6.67
Al_2O_3	2.81
La_2O_3	8.02.

4,285,730
MOLDABLE GLASSES

Leon M. Sanford, Painted Post, and Paul A. Tick, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 82,150, Oct. 5, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,437
Int. Cl.³ C03C *3/16*
U.S. Cl. 106—47 R **5 Claims**

1. An anhydrous glass suitable for being molded or otherwise shaped under pressure at temperatures below about 450° C. having a base composition wherein Al_2O_3 is essentially absent consisting essentially, expressed in mole percent as analyzed on the oxide basis, of at least 20% but less than 50% P_2O_5, 15–45% R_2O, wherein R_2O consists of 0–45% Li_2O, 0–20% Na_2O, and 0–10% K_2O, and 0–20% RO, wherein RO consists of 0–10% MgO, 0–15% CaO, 0–20% SrO, and 0–20% BaO, with about 0.3–3% by weight F as analyzed in the final glass.

4,285,731
LEAD-FREE AND CADMIUM-FREE FRITS

Jaroslava M. Nigrin, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 15, 1980, Ser. No. 121,744
Int. Cl.³ C03C *3/08, 5/00*
U.S. Cl. 106—48 **2 Claims**

1. A frit essentially free from cadmium and lead demonstrat-

ing good glass stability, a coefficient of thermal expansion (20°-300° C.) between about 65-75$\times 10^{-7}$/°C., a viscosity suitable for firing at about 700°-950° C., and excellent resistance to attack by acids and bases as evidenced by no change of gloss and a weight loss of no more than about 0.02% after immersion for 24 hours at 96° C. into an aqueous solution containing 10% by weight citric acid and by no change of gloss and a weight loss of no more than about 0.02% after immersion for 24 hours at 96° C. into an aqueous solution containing 0.3% by weight of an alkaline detergent, said frit consisting essentially, expressed in weight percent on the oxide basis as calculated from the batch, of

SiO_2	35-47
B_2O_3	5.5-9
BaO	24-42
TiO_2	1.5-4
ZrO_2	6-10
Li_2O	1-5
MgO	0-5
CaO	0-4
SrO	0-8
ZnO	0-10
Bi_2O_3	0-8
MgO + CaO + SrO + ZnO + Bi_2O_3	0-10

4,285,732

ALUMINA CERAMIC

Richard J. Charles, Schenectady; Svante Prochazka, Ballston Lake, both of N.Y., and Curtis E. Scott, Eastlake, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 11, 1980, Ser. No. 129,471

Int. Cl.[3] **C04B** *35/02, 35/48*

U.S. Cl. 106—57 **14 Claims**

1. A process for producing an optically translucent polycrystalline alumina sintered body which consists essentially of providing at least a substantially homogeneous dispersion consisting essentially of alumina, MgO or precursor therefor, and an additive selected from the group consisting of ZrO_2, HfO_2, and a mixture thereof or precursors therefor, said alumina ranging in composition from α-Al_2O_3 to at least about 80% by weight α-Al_2O_3 with the remaining alumina being of polymorphic form other than α, said MgO being present in an amount ranging from about 0.03% by weight to less than about 0.15% by weight of said alumina, said ZrO_2 being present in an amount ranging from higher than 0.002% by weight up to about 0.07% by weight of said alumina, said HfO_2 being present in an amount ranging from higher than 0.003% by weight up to about 0.12% by weight of said alumina, said mixture of ZrO_2 and HfO_2 being composed of all ratios of ZrO_2 and HfO_2 and being present in a total amount ranging from higher than 0.002% by weight up to about 0.12% by weight of said alumina, said dispersion having an average crystalline size ranging from about 0.05 micron to less than one micron, forming said dispersion into a green body having a density of at least about 30% of the theoretical density of 3.98 g/cc for alumina, and sintering said body in an atmospheric of hydrogen having a dew point higher than +30° C. at a sintering temperature ranging from about 1750° C. to about 1950° C. producing a sintered body of theoretical density based on the density of 3.98 g/cc for alumina, said precursor decomposing completely below said sintering temperature to form said oxide and by-product gas.

4,285,733

CORROSION INHIBITING CONCRETE COMPOSITION

Arnold M. Rosenberg, Potomac, and James M. Caidis, Ellicott City, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 18,085, Mar. 6, 1979, abandoned. This application Feb. 22, 1980, Ser. No. 123,741

Int. Cl.[3] **C04B** *7/02*

U.S. Cl. 106—98 **10 Claims**

1. A method of substantially completely inhibiting the corrosion of metal pieces contained in a reinforced concrete structure comprising

forming an unset concrete composition by substantially uniformly mixing a concrete mixture formed from hydraulic cement, sand, aggregate and water with at least 2 percent calcium nitrite by weight based on the dry weight of the cement content contained in said concrete mixture wherein the concrete composition is capable of exhibiting a compressive strength of at least 5000 psi at 28 days;

embedding metal pieces in said unset concrete composition while forming a shaped structure; and permitting said composition to set.

4,285,734

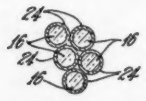
CHEMICALLY MODIFIED BITUMEN COMPOSITION

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 55,738, Jul. 9, 1979, Pat. No. 4,251,577. This application Jun. 19, 1980, Ser. No. 160,800

Int. Cl.[3] **B32B** *11/00;* **C08L** *95/00*

U.S. Cl. 106—273 R **5 Claims**



1. A chemically modified bitumen composition consisting essentially of the reaction of (a) a bitumen and (b) a chromic complex containing a carboxylato group containing a functional group reactive with the bitumen.

4,285,735

FRUCTOSE POLYMER MIXTURE

William A. Mitchell, 175 Jacksonville Rd., Lincoln Park, N.J. 07035; Charles E. Mitchell, 1336 Woodcrest Ct., Fort Collins, Colo. 80526, and Pat R. Mitchell, 446 N. Powers, Manteca, Calif. 95336

Filed Mar. 10, 1980, Ser. No. 128,978

Int. Cl.[3] **C13L** *3/00*

U.S. Cl. 127—29 **9 Claims**

1. The process for extracting a fructose polymer mixture dispersion from dahlia tubers without adding water or heating, comprising

grinding scrubbed dahlia tubers at temperatures of 2° to 40° C. to about a 10 mesh particle size; and

then separating the water solubles from the insoluble fibrous material within no longer than about ten minutes.

4,285,736

METHOD FOR WASHING BY MEANS OF A ROTATING WASHING EQUIPMENT, AND WASHING DEVICE FOR THE PRACTICE OF THE METHOD

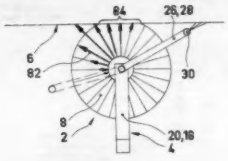
Laszlo Arato, Seebuchtstr. 19, CH-6374 Buochs, Switzerland

Continuation of Ser. No. 859,237, Dec. 9, 1977, abandoned. This application Jul. 3, 1979, Ser. No. 54,444

Claims priority, application Switzerland, Dec. 17, 1976, 15900/76

Int. Cl.³ B08B 7/00

U.S. Cl. 134—6 17 Claims



1. A method for washing a surface with a washing device having cleaning bristles which rotate about a hollow shaft comprising the steps of moving the washing device in a first direction relative to the surface to be washed, contacting said surface with the bristles, rotating the washing device relative to said surface in a direction counter to said first direction at the area of contact with said surface, providing a washing liquid, and supplying the washing liquid from said hollow shaft to the rotating washing device only during a limited angle of rotation of each revolution of the device said angle ending just prior to the contact area between the bristles and the surface so that substantially all the washing liquid ejected from the device moves toward said surface.

4,285,737

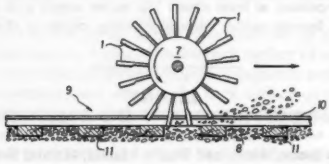
METHOD OF CLEANING RAILROAD TRACK

John G. Price, Box 3197, Montgomery, Ala. 36109

Division of Ser. No. 909,476, May 25, 1978, Pat. No. 4,184,223. This application Jul. 12, 1979, Ser. No. 57,088

Int. Cl.³ B08B 1/04

U.S. Cl. 134—6 2 Claims



1. A method of clearing a railway roadbed of loose material comprising the steps of:

(a) providing a drum with a plurality of radially-projecting elastomeric sweeper elements, each element comprising a unitary stem portion terminating in a knob portion, the knob portion having a substantially larger cross-sectional area than the stem portion and formed as a weighting mass, the stem and knob portions being formed into a unitary structure with the knob portion having a substantially planar forward surface;

(b) rotating the drum with the radially projecting sweeper bristle elements over the railway roadbed to be cleared so that said forward surface contacts the loose material;

(c) imparting a centrifugal force on said stem and said knob, wherein the knob portion is imparted with a portion of said centrifugal force proportionally greater than its mass relative to the mass of the stem portion;

(d) striking the loose material with said knob with sufficient force to cause the loose material which contacts said knob to be driven away from said element, wherein said centrifugal force and a mass inertia imparted on the elements by said rotating drum enables the bristle elements to move ballast along a railway roadbed.

4,285,738

CLEANING COMPOSITION FOR CONTACT LENSES

Kazumi Ogata, Toyonaka, Japan, assignor to Senju Pharmaceutical Co., Ltd., Osaka, Japan

Filed Apr. 16, 1979, Ser. No. 29,993

Claims priority, application Japan, Apr. 24, 1978, 53/48392

Int. Cl.³ B08B 3/08

U.S. Cl. 134—26 10 Claims

1. A composition for cleaning contact lenses contaminated with proteinaceous matter by immersing the lenses in an aqueous hypertonic solution, said composition comprising urea or an acid salt of guanidine in an amount sufficient to make the solution hypertonic, an effective amount of a sulfhydryl group-containing compound to reduce intermolecular or intramolecular S—S bonds in the contaminant proteinaceous matter and a proteolytic enzyme in an amount sufficient to have a synergistic cleaning effect with the urea or the acid salt of guanidine mentioned above.

4. A method for removing proteinaceous deposits on contact lenses which comprises immersing the lenses for a period of time sufficient to clean the lenses at room temperature or under heating, in an aqueous composition comprising urea or an acid salt of guanidine in an amount sufficient to make the composition hypertonic, an effective amount of a reducing agent of the group consisting of a sulfite, a pyrosulfite, a dithionite, sodium borohydride and a reducing organic water-soluble mercapto group-containing compound to reduce intermolecular or intramolecular S—S bonds in the contaminant proteinaceous matter, and rinsing the lenses to remove the urea or the acid salt of guanidine and the reducing agent from the lenses.

4,285,739

PROCESS OF MANUFACTURING SOLID BODIES OF COPPER-ZINC-ALUMINIUM ALLOYS

Andre E. A. Deruyttere, Louvain; Lucas J. A. E. Delaey; Etienne A. D. Aernoudt, both of Bertem, and Josef R. Roos, Kessel-Lo, all of Belgium, assignors to Leuven Research and Development VZW, Louvain, Belgium

Filed Dec. 21, 1978, Ser. No. 971,695

Claims priority, application Netherlands, Dec. 28, 1977, 7714494

Int. Cl.³ C22F 1/08

U.S. Cl. 148—11.5 C 27 Claims

1. A process of preparing solid bodies of copper-zinc-aluminum alloys having a β-crystal structure and a fatigue resistance of at least 100,000 cycles for a psuedo-elastic elongation of 0.8 to 1% under a maximum bending load of 250 MN/m^2, which comprises the steps of providing a pulverulent material which consists essentially of unavoidable impurities, 10–40% by weight of Zn, 1–12% by weight of Al and the balance of Cu, cold compacting this pulverulent material and subsequently hot extruding it to form a solid body.

22. The method of making a Cu-Zn-Al alloy article which exhibits reversible shape memory effect, pseudo-elastic properties and, a fatigue resistance of at least 100,000 cycles for a psuedo-elastic elongation of 0.8 to 1% under a maximum bending load of 250 MN/m^2, which comprises the steps of:

(a) providing a pulverulent material which consists essentially of unavoidable impurities, 10–40% by weight of Zn, 1–12% by weight of Al, and the balance Cu in such proportions as will yield an alloy which, at room temperature, is predominantly of β-crystal structure;

(b) compacting the pulverulent material of step (a) at substantially ambient temperature to provide a coherent mass;

(c) heating the mass of step (b) to a temperature in the order

of 700°–800° C. and extruding said heated mass to form the article with a density of substantially 100%.

4,285,740

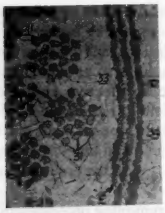
WRAPPED TANTALUM DIFFUSION BARRIER

Morris S. Young, Murray Hill, N.J., and David C. Larbalestier, Madison, Wis., assignors to Airco, Inc., Montvale, N.J.

Division of Ser. No. 933,302, Aug. 14, 1978, Pat. No. 4,205,119, which is a continuation-in-part of Ser. No. 920,616, Jun. 29, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,235

Int. Cl.³ C21D *8/12*; H01L *39/00*

U.S. Cl. 148—11.5 Q **4 Claims**



1. A process for manufacturing a multifilamentary stabilized superconductor of the A_3B type in which A_3B is selected from the group consisting of Nb_3Sn and V_3Ga, comprising:

preparing a billet of Cu and the B material having rods of the A material embedded therein;

working this billet to an intermediate shape and size;

wrapping the worked billet with a foil of Ta, such that at least one complete layer of Ta is formed around said worked billet;

inserting a foil of a softer metal than Ta between any overlapping portions of the Ta foil, so that Ta-to-Ta contact is prevented;

enclosing this wrapped assembly in a Cu tube;

working this enclosed wrapped assembly to a desired final shape and size; and

heat treating the finally formed assembly in order to form the A_3B compound at the interfaces between the A material and the B material.

4,285,741

PROCESS FOR PRODUCING HIGH-STRENGTH, LOW YIELD RATIO AND HIGH DUCTILITY DUAL-PHASE STRUCTURE STEEL SHEETS

Takashi Furukawa, Machida, and Kazuo Koyama, Kimitsu, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,546

Claims priority, application Japan, Jun. 16, 1978, 53-52801

Int. Cl.³ C21D *8/02, 9/46*

U.S. Cl. 148—12 D **8 Claims**

1. In a process for producing a dual-phase structure steel sheet comprising hot rolling a steel containing 0.03 to 0.12% C, not more than 0.8% Si, and 0.8 to 1.7% Mn with the balance being iron and unavoidable impurities, and continuously annealing the hot rolled steel sheet in a range from 730° to 900° C., improvements comprising cooling the continuously annealed steel sheet under the following conditions:

(1) 1° C./second $\leqq R_1 \leqq$ 30° C./second

wherein R_1 represents an average cooling rate from the continuous annealing temperature down to an intermediate temperature T°C. in the cooling process

(2) 4° C./second $\leqq R_2 \leqq$ 100° C./second

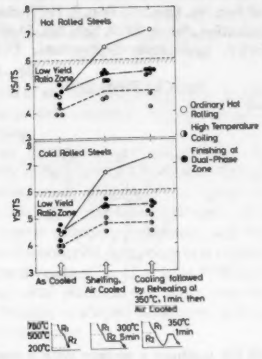
wherein R_2 represents an average cooling rate from T°C. to a temperature not higher than 200° C.

(3) $R_1 < R_2$

and

(4) 420° C. $\leqq T \leqq$ 700° C.

to obtain high strength, low yield ratio of not over 0.6 and high ductility dual-phase structure steel sheet having a structure



composed mainly of a ferrite phase and a rapidly cooled transformation phase and having excellent formability with a tensile strength of 40 kg/mm² or higher.

4,285,742

HEAT TREATMENT METHOD

Robert G. Bowes, Otley, and Robert D. Chapman, Harrogate, both of England, assignors to BOC Limited, London, England

Filed Nov. 29, 1979, Ser. No. 98,577

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16 **10 Claims**

1. A method of decarburising ferrous metal comprising the steps of introducing the ferrous metal to be decarburised into a working chamber of a heat treatment furnace, raising the ferrous metal to a temperature at which decarburisation is able to take place, and establishing in the working chamber a decarburising atmosphere by admitting into the chamber inert gas, water and a compound of carbon, hydrogen and oxygen, the relative proportions of water and the compound of carbon, hydrogen and oxygen being such that at the prevailing temperature in the working chamber the atmosphere established therein contains at least about 1% water vapor and decarburises the ferrous metal without forming oxide of the ferrous metal.

4,285,743

GRANULAR PROPELLANT AND A METHOD OF PRODUCING THE SAME

Kazuhiro Inoue, Aichi, and Fumio Matsui, Handa, both of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Division of Ser. No. 964,040, Nov. 27, 1978, Pat. No. 4,214,927. This application Sep. 28, 1979, Ser. No. 80,152

Claims priority, application Japan, Nov. 30, 1977, 52-143603

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 **2 Claims**

1. In a method of producing double-base granular propellants, wherein components of a double-base propellant composition consisting mainly of nitroglycerine and nitrocellulose are dissolved in an organic solvent to form a lacquer solution, and the lacquer solution is dispersed in water and formed into granules, an improvement comprising using an organic solvent, which does not react with a polyfunctional isocyanate, as the solvent to prepare an aqueous dispersion of the lacquer solution containing the above described components of the double-base propellant composition, mixing the aqueous dispersion with a polyfunctional isocyanate while stirring, and further stirring the resulting mixture together with an aqueous solution of a protective colloid to form the nitrocellulose into

a three-dimensional structure by the crosslinking reaction of the polyfunctional isocyanate and concurrently to form granules.

4,285,744

PROCESS FOR THE REPRODUCTION OF OIL PAINTINGS OR SIMILARLY TEXTURED IMAGES

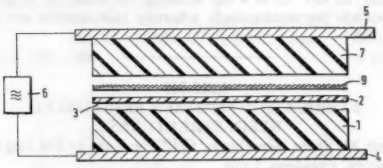
Emil Rudolf, and Manfred Rudolf, both of Adelstetten 8, 8229 Ainring 1, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 97,415

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851875

Int. Cl.³ B29C *27/04;* B44C *1/20;* B44F *11/02*

U.S. Cl. 156—59 **6 Claims**



1. In a process for the reproduction of oil paintings or similarly surface-textured images by initially forming a relief form on the original, removing the relief form from the original, and forming a reenforced smooth thermoplastic color film imprinted in a manner corresponding to the original; wherein the reenforced film and relief form are aligned, and the film being thereafter deformed by heat until the surface texture of the film corresponds to the original through the use of the relief form, said process being characterized in that:

(a) said reenforced colored film consists of a material capable of being heated dielectrically at high frequency radiation and a reenforcement ply;

(b) said reenforcement ply consists of a woven webbing having a coating thereon, said coating being capable of being dielectrically heated by high frequency radiation and capable of being welded to the surface of said color film;

(c) said process being further characterized in that said reenforcing ply is placed on the back surface of said color film and subjected to high frequency radiation until heated dielectrically, and wherein the back surface of the reenforcing ply is exposed to a pressure equalizing plate fabricated from closed-cell foam synthetic resinous material which is substantially immune to dielectric heating.

4,285,745

METHOD OF DETERMINING OPTICAL QUALITY OF A LAMINATED ARTICLE

Aloysius W. Farabaugh, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1979, Ser. No. 62,832

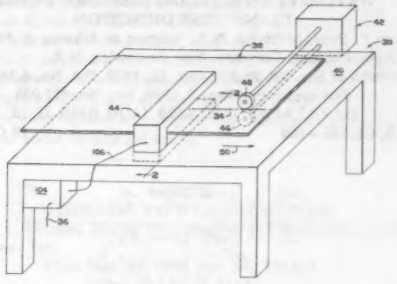
Int. Cl.³ B32B *31/12, 17/10;* G01N *21/32*

U.S. Cl. 156—64 **10 Claims**

1. In a method of making a transparent laminate, wherein the method includes the step of laminating at least one sheet to a plastic sheet, wherein the improvement comprises the steps of:

generating an optical profile of the plastic sheet prior to the lamination step;

altering portions of the optical profile of the plastic sheet to be affected by the laminating step to provide an altered optical profile which is the expected optical contribution of the plastic sheet to the laminate; and



practicing the laminating step using a plastic sheet determined to have an acceptable altered optical profile.

4,285,746

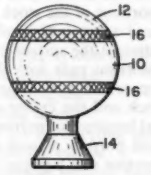
METHOD OF DECORATING SEASONAL ORNAMENTS

Ronald G. DePuy, Corning, and George W. Stevens, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 360,952, May 16, 1973, abandoned. This application Aug. 29, 1975, Ser. No. 609,076

Int. Cl.³ B32B *5/18, 1/00;* B29C *27/00*

U.S. Cl. 156—79 **2 Claims**



1. An improved method of simultaneously decorating seasonal ornaments and applying a protective band thereto comprising the steps of applying a heat-activated adhesive along portions of the outer surface of a tube of heat shrinkable material, cutting said tube of heat shrinkable material transversely of its longitudinal extent into a plurality of tubular bands each having heat-activated adhesive thereon, positioning one of said tubular bands about the outer surface of a curvilinear seasonal ornament to be decorated, applying heat to said ornament and said band and heat shrinking said band about the outer surface of said ornament while simultaneously activating said heat-activated adhesive, and applying decorative material to said heat activated adhesive after said band has formed a shrink fit on said ornament to adhere such decorative material only upon those portions of the band having said heat-activated adhesive.

2. An improved method of simultaneously decorating seasonal ornaments and applying a protective band thereto comprising the steps of applying a thermally expandable coating along the outer surface of a tube of heat shrinkable material, cutting said tube of heat shrinkable material transversely of its longitudinal extent into a plurality of tubular bands each having a thermally expandable coating thereon, positioning one of said tubular bands about the outer surface of a curvilinear seasonal ornament to be decorated, applying heat to said ornament and band and simultaneously heat shrinking said band about the outer surface of said ornament while expanding said coating on said band to provide a protective surface on said ornament with a three dimensional decoration.

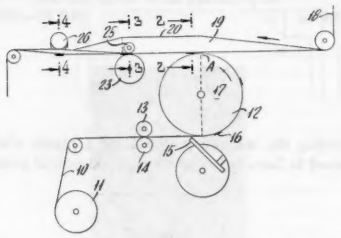
4,285,747
METHOD FOR MANUFACTURING A PRODUCT HAVING ELASTIC MEANS DISPOSED IN THE TRANSVERSE DIRECTION

John F. Rega, Milltown, N.J., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Division of Ser. No. 86,219, Oct. 18, 1979, Pat. No. 4,240,866. This application Apr. 7, 1980, Ser. No. 137,938

Int. Cl.[3] **A61F** *13/16;* **A32B** *31/10;* **B32B** *31/18*

U.S. Cl. 156—164 **19 Claims**



9. The method of manufacturing disposable diapers having stretchable waistband portions comprising: moving diaper stock comprising continuous and co-extensive pervious and impervious web surfaces having spaced apart absorbent pads disposed therebetween, said webs being secured together along their longitudinal side margins and in spaces between said absorbent pads, in a plane; displacing the central longitudinal portion of the stock out of said plane while maintaining the longitudinal side portions of the stock in said plane; continuously feeding spaced apart, individual, discrete, unstretched elastic members adjacent the surface of the stock in alternate spaces between absorbent pads with the ends of each elastic member being disposed adjacent opposite longitudinal side margins of the stock and the center of said elastic member spanning the central longitudinal portion of the stock; adhering the unstretched end portion of said elastic member to the surface of the respective side portions of the stock; diverging the longitudinal side portions with respect to each other to return the stock to at least its original plane to stretch the center portion of the elastic member and adhere it to the surface of the stock; and transversely severing the diaper stock in the spaces between absorbent pads to produce individual disposable diapers.

4,285,748
SELFBONDED NONWOVEN FABRICS

Hazael E. Booker; Barrie L. Davies; Alfred J. Hughes, and Charles J. Shimalla, all of Charlotte, N.C., assignors to Fiber Industries, Inc., New York, N.Y.

Division of Ser. No. 881,472, Feb. 27, 1978, Pat. No. 4,211,816, which is a continuation-in-part of Ser. No. 776,565, Mar. 11, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 107,228

Int. Cl.[3] **B32B** *31/00;* **D02G** *3/00;* **D04H** *3/08*

U.S. Cl. 156—167 **4 Claims**

1. An improved process for preparing a fabric having an Elmendorf tear strength (ASTM D-1424), T, of at least 6 lb. and a normalized grab tensile strength, G, of at least 120 lb. (ASTM D-1117) for a 140 gm/meter^2 fabric, and the value of the product T×G being at leas: 1,200 by a process comprising the steps of melt spinning sheath/core heterofilaments, drawing the spun filaments, laying the drawn filaments to form an unbonded web, and thereafter bonding the web by the application of heat and pressure to form a selfbonded nonwoven fabric without using solvents that are relatively non-volatile at the bonding conditions, wherein the improvement comprises:

(i) melt spinning sheath/core heterofilaments, wherein said sheath is high density polyethylene having a solid state density in the range from 0.930 to 0.965 gm/cc and having a melt flow index from 1 to 50 as measured by ASTM D-1238, and wherein said high density polyethylene comprises from 5 to 30 weight percent of said heterofilament;

(ii) drawing said spun heterofilaments at a draw ratio within the range 2.0 to 6.0, at a temperature up to 120° C.; and

(iii) bonding said unbonded web at a temperature of from 120° to 155° C. at a nip stress in the range of 50 to 140 pounds per square inch, whereby said sheaths are softened.

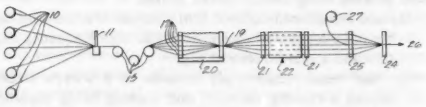
4,285,749
FABRICATION OF FIBER REINFORCED RESIN STRUCTURES

Kenneth M. Stiles, San Dimas, Calif., assignor to Sea Log Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 854,411, Nov. 23, 1977, Pat. No. 4,168,194, which is a continuation-in-part of Ser. No. 824,039, Aug. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 744,029, Dec. 12, 1976, abandoned. This application Apr. 26, 1979, Ser. No. 33,800 The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.

Int. Cl.[3] **B32B** *17/00;* **B29C** *25/00*

U.S. Cl. 156—180 **6 Claims**



1. A process for the production of fiber reinforced resin structures which comprises, under tension:

(a) coating a plurality of continuous fibers with a liquid heat curable thermosetting resin composition at a resin temperature below the temperature at which cure of the thermosetting resin is initiated;

(b) passing the resin coated fibers through a plurality of in series elongated radiant heating zones, each having at least one heated internal surface, each heating zone being spaced from each other and from at least one interposed cold shaping die which is relatively narrow with respect to the length of a radiant heat zone and having a structure shaping orifice, the internal surfaces of the heating zone being in spaced relation to the resin coated fibers, said radiant heating zones raising the applied resin by radiation and convection to a temperature sufficient to reduce the viscosity of the resin relative to the introduction viscosity of the resin to the radiant heating zone and initiate partial cure of the resin;

(c) drawing the fibers and resin through the orifices of each cold shaping die between each radiant heating zone at a die temperature between each radiant heating zone at a die temperature substantially below the temperature at which curing of the resin is initiated;

(d) drawing the resin coated fibers through at least one cold shaping die following the last of said radiant heating zones, said die being at a temperature substantially below the temperature at which cure of the resin is initiated, the

resin being at the gel point at or prior to contact with the final die;

(e) passing the resin coated fibers from the final cold shaping die through at least one curing zone providing internal heating surfaces in spaced relation from the resin coated fibers for a time sufficient for the resin to achieve a hard gelled surface;

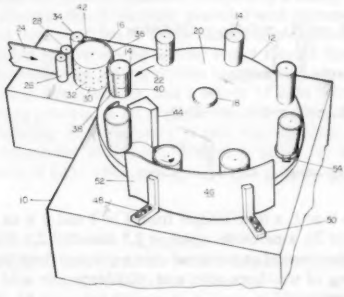
(f) passing, in the substantial absense of oxygen, the resin coated fibers having the hard gelled surface through at least one molten metal bath maintained at a temperature from about 95° C. to the anaerobic degradation temperature of the resin for a time sufficient to achieve essentially complete cure of the resin of fiber reinforced resin structure.

4,285,750

METHOD FOR PRODUCING A PLASTIC SLEEVE

Edward A. DeMartino, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jul. 23, 1979, Ser. No. 59,726
Int. Cl.³ B29D *23/10*; B65C *9/04*
U.S. Cl. 156—218 **4 Claims**



1. In the method of making a tubular sleeve of thermoplastic sheet material including the steps of;

(a) feeding a strip of sheet stock to a winding apparatus which includes a rotatable turret,

(b) severing said strip into individual rectangular blanks each having a leading edge and a trailing edge,

(c) forming each of said blanks into a cylindrically shaped sleeve by wrapping it around a mandrel,

(d) overlapping the trailing edge of said blank so that it is exterior of the leading edge of said blank,

(e) applying a softening medium to the edges of said blank, the improvement in the method of making a sleeve comprising the additional steps of;

(f) moving said mandrel and its exteriorly positioned blank past an arcuate sealing plate, and

(g) ironing the overlapped edges of said blank by the relative movement and contact between said sealing plate and said blank whereby the overlapped softened edges fuse together to form a smooth seam.

4,285,751

METHOD OF FORMING AN IMPROVED BATTERY SEPARATOR

Stewart C. Feinberg, Columbia; Christian B. Lundsager, Ashton; Joseph T. Lundquist, Jr., Columbia, and Robert A. Balouskus, Sykesville, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 38,007, May 10, 1979, Pat. No. 4,224,393. This application Feb. 29, 1980, Ser. No. 127,172
Int. Cl.³ B29D *7/00*; H01M *2/16*
U.S. Cl. 156—242 **7 Claims**

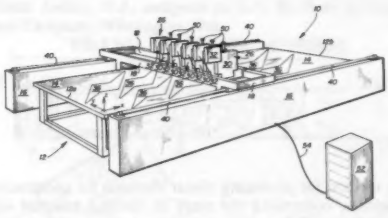
1. A process of forming a battery separator comprising (a) forming a substantially uniform mixture of a thermoplastic rubber formed of a styrene/elastomer/styrene block copolymer having styrene to elastomer weight ratio of from about 15/85 to 40/60 and an inert filler having an average particle size of from about 0.01 to 10 microns, wherein the volume ratio of block copolymer to filler is from 1:0.15 to 1:0.6; (b) subjecting said mixture to a combination of stress forces and elevated temperature sufficient to disrupt the thermoplastic domains of said block copolymer; and shaping said mixture into a sheet of less than about 10 mils thickness.

4,285,752

AUTOMATIC TAPE LAY-UP SYSTEM

Bobby L. Higgins, Dallas, Tex., assignor to Camsco, Inc., Richardson, Tex.

Filed Mar. 13, 1980, Ser. No. 130,034
Int. Cl.³ B32B *31/04*
U.S. Cl. 156—250 **24 Claims**



1. An automatic tape laying system for depositing tape in a lay-up on a work surface comprising:

a tape supply reel for storing tape;

cutting means for cutting tape;

tape transport means for transporting tape from said tape supply reel to said cutting means;

tape deposit means pivotable between first and second positions for continuously receiving tape in said first and second positions from said cutting means; and

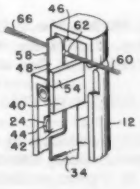
said tape being received in said tape deposit means first position for deposit along a first direction on the work surface and said tape being received in said tape deposit means second position for deposit along a second direction on the work surface.

4,285,753

SYNTHETIC YARN DEVICE

William P. Warthen, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 10, 1979, Ser. No. 73,733
Int. Cl.³ B26F *3/08*; B32B *31/18*
U.S. Cl. 156—251 **4 Claims**



1. A self-contained apparatus to sever the tails of at least two tied yarns with a knot therein comprising: a housing; a source

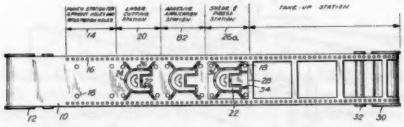
of power in said housing; a pair of flexible conductive members mounted in said housing operably associated with said source of power and spaced from one another, a resistance heater means connected to both of said conductive members, a slot in said housing adjacent the space between said conductive members to allow a tied yarn to be placed between said conductive members and means operably associated with said source of power and said conductive members to supply power to said heater means when said conductive members are bent by the engagement of the knot of said tied yarns.

4,285,754

METHOD AND APPARATUS FOR PRODUCING PLANAR ELEMENTS IN THE CONSTRUCTION OF SURFACES AND BODIES

Paul DiMatteo, Huntington, N.Y., assignor to Solid Photography Inc., Melville, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,143
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—264 **12 Claims**



1. A method for producing planar elements for construction of a surface, comprising the steps of: feeding material with substantially parallel surfaces into a processing path; applying at least one reference location hole through said material within a predetermined area of said material for registering positions of planar elements relative to each other when stacked; cutting a predetermined contour through said material for subsequent removal of a predetermined planar element from said material; applying a cut through said material and spaced from said planar element for producing a blank carrying said planar element, said cut enclosing said planar element and having a closed cutting line; removing said blank from said material; collecting the material remaining after said blank has been removed, said contour being cut along a cut path in which tabs are left for supporting said planar elements, said tabs connecting said planar element to said blank; stacking blanks in predetermined relationship to each other through registration of said reference location hole; and severing said tabs after stacking said blanks for separating the planar elements from the blanks to form said surface of stacked elements, said reference location hole being applied before said planar element and blank are detached from said material, said planar elements being stacked to a depth dependent on the characteristics of said surface.

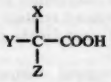
4,285,755

ADHESIVE COMPOSITION AND METHOD

Gerhardt Piestert, Oberursel, and Heinz G. Gilch, Leimen, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 885,080, Mar. 9, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 75,904
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1977, 2711748
Int. Cl.³ B29C *19/00*; C09J *5/00*
U.S. Cl. 156—294 **21 Claims**

1. A method of bonding metal surfaces by use of an anaerobic adhesive composition consisting essentially of a polymerizable acrylic monomer, an organic peroxide selected from the group consisting of benzoyl peroxide; 2,5 dimethyl-2,5di(t-butylperoxy)hexane; 1,1 di-t-butylperoxy-3,3,5-trimethylcyclohexane; dilauryl peroxide and mixtures of these and an acidic substance characterized in that the acidic substance is a halogenated aliphatic monocarboxylic acid according to the general formula



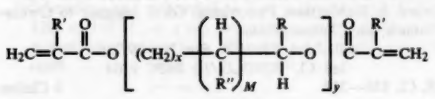
in which

(i) each of X, Y and Z is Cl or Br or

(ii) Z is H or R (where R is a methyl or ethyl group), and each of X and Y is Cl or Br or

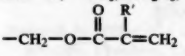
(iii) each of Y and Z is H or R and X is Cl.

17. An anaerobic adhesive composition consisting essentially of a polymerizable acrylate monomer of the general formula

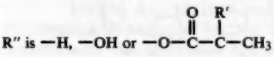


where:

R is —H, —CH_3, —C_2H_5, —CH_2OH or



R′ is —H, —Cl, —CH_3 or —C_2H_5



and n is 0 or 1, x is an integer from 1 to 8 and y is an integer from 1 to 20, a peroxide which is 2,5 dimethyl-2,5-di(t-butylperoxy)hexane and an acidic substance selected from the group consisting of trichloroacetic acid, dichloroacetic acid, or tribromoacetic acid.

4,285,756

ADHESION OF POLYAMIDE OR POLYESTER CORDS TO EPDM RUBBER

Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

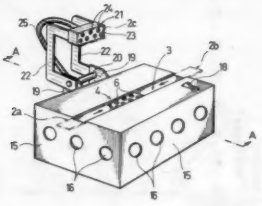
Filed Jul. 7, 1980, Ser. No. 166,633
Int. Cl.³ B29H *9/00*; C08L *61/12*
U.S. Cl. 156—334 **12 Claims**

7. A method for adhering a polyamide or polyester reinforcing element to an ethylene-propylene-non conjugated diene rubbery polymer (EPDM) compound which comprises treating said element with an aqueous alkaline dispersion of about 10 to 35% by weight of solids consisting essentially of on a dry weight basis 100 parts by weight of a rubbery polybutadiene and a water-soluble thermosetting phenolic-aldehyde resin in an amount of from about 10 to 40 parts by weight, heating said treated element at a temperature of from about 300° to 525° F. for from about 150 to 25 seconds to remove essentially all of the water from said dispersion and to provide said element with a heat set adhesive in an amount of from about 3 to 17% by weight (dry) based on the weight of said reinforcing element, combining said dried and heat set adhesive containing reinforcing element with an unvulcanized vulcanizable ethylene-propylene-non conjugated diene rubbery polymer (EPDM) compound and vulcanizing the same.

4,285,757
TAPE END JOINING APPARATUS

Eizo Mori, 145-7, 3-Chome, Okubo-Cho, Moriguchi-Shi, Osaka, Japan (573)

Filed Apr. 2, 1979, Ser. No. 26,347
Claims priority, application Japan, Apr. 4, 1978, 53-40676
Int. Cl.³ B31F 5/06; G03D 15/04
U.S. Cl. 156—350 2 Claims

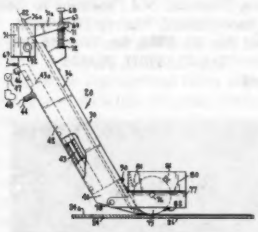


1. A tape end joining apparatus comprising a casing having an inlet chamber that is internally provided with pneumatically attracting means and has an upper surface area engraved with a tape guide groove having at least a part thereof forming a light permeable tape joining portion bored with a plurality of vents to said inlet chamber, and a source of light below said tape joining portion, an air pressure detector arranged to detect a lowering of air pressure in said inlet chamber, and a switch, responsive to said air pressure detector, for lighting said source of light when tape ends in said groove cover said vents.

4,285,758
BONDING APPARATUS FOR THERMOPLASTIC COATED MATERIALS

Victor H. Clausen, and Charles E. Asbury, Jr., both of Vancouver, Wash., assignors to H. B. Fuller Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 42,350, May 25, 1979, abandoned. This application Mar. 26, 1980, Ser. No. 134,098
Int. Cl.³ B32B 31/00
U.S. Cl. 156—498 38 Claims



1. Applicator apparatus for bonding a continous thermoplastic-adhesive coated core material to a substrate moving over a reactive surface, comprising:

(a) heated guide means defining a heated passageway terminating at an output orifice, for guiding a continuous length of thermoplastic-adhesive coated core material through said passageway and for heating said material as it proceeds through said passageway such that the temperature of said material leaving said output orifice attains the melting flow-point temperature of said adhesive coating;

(b) a bonding shoe mounted to said guide means, and having a generally planar bonding surface adjacent said output orifice across and in engagement with which said heated continuous material passes upon leaving said orifice;

(c) means for heating said shoe;

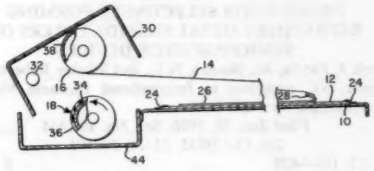
(d) mounting means for pivotally mounting said guide means and said bonding shoe about a mounting axis such that said shoe bonding surface cooperatively addresses and lies substantially coplanar with said reactive surface, whereby said continuous material leaving said output orifice is sandwiched between said shoe bonding surface and a substrate moving over said reactive surface; and

(e) biasing means operatively connected with said guide means for controllably applying a force to said guide means and said bonding shoe, about said mounting axis, to control the bonding force exerted by said shoe bonding surface in the direction toward said reactive surface, thereby controlling the bonding force exerted on said continuous material as it is pressed into a substrate moving over the reactive surface.

4,285,759
APPARATUS FOR STRIPPING A COVER SHEET

Richard B. Allen, Waterbury, Conn., and Thomas E. Patten, South Amboy, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1979, Ser. No. 95,300
Int. Cl.³ B32B 31/16
U.S. Cl. 156—584 6 Claims



1. An apparatus comprising:

a support having a top surface on which a film including a cover sheet can be fixed in a stationary relationship with respect to a stripping roll;

an elongated stripping roll mounted for rotation about an axis parallel to said top surface;

a leader in the form of a thin sheet having opposed ends, one of said ends being attached to said roll, the other of said ends being adapted for attachment to an edge of a cover sheet remote from said roll; and

drive means coupled to the roll for rotating said roll to apply an even, steady tension to said leader as said leader is wrapped thereon thereby stripping the cover sheet from a fixed film.

4,285,760
ZONE PURIFICATION OF CYLINDRICAL INGOTS

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

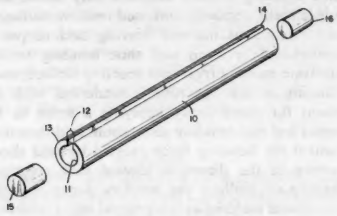
Filed Oct. 25, 1979, Ser. No. 88,270
Int. Cl.³ C30B 13/14
U.S. Cl. 156—617 H 3 Claims

1. A zone refining process for substantially removing impurities from a mixed thallium halide material which comprises:

(a) containing a charge of the material in a cylindrical cavity defined by a container maintained substantially horizontal and having a volume expansion space along the length of said container and above said cavity, said volume expansion space having a width no wider than that necessary to retain a substantially round cross-section of said charge following zone refining;

(b) traversing from one end of said charge to another at least once a zone of a predetermined elevated temperature sufficient to melt a portion of said material, thereby sweeping impurities to one end of said charge; and

(c) accomodating expanded material in said volume expansion space, whereby pressure buildup is eliminated, fractures and other damage to the zone refined material or its container are minimized and said substantially round cross-section is retained.

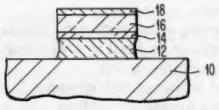


4,285,761

PROCESS FOR SELECTIVELY FORMING REFRACTORY METAL SILICIDE LAYERS ON SEMICONDUCTOR DEVICES

Joseph J. Fatula, Jr., Beacon, N.Y., and Stanley Roberts, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,464
Int. Cl.³ H01L *21/24, 21/306*
U.S. Cl. 156—628 **8 Claims**



1. A method of forming and defining a refractory metal silicide layer on a substrate comprising,
providing a blanket layer of SiO_2 on said substrate,
depositing a blanket layer of polycrystalline Si over said layer of SiO_2,
defining a pattern in said polycrystalline Si layer thereby exposing selected areas of said layer of SiO_2,
depositing a blanket layer of refractory metal silicide on said substrate over said layers of SiO_2 and said polycrystalline Si,
heating the composite substrate in an oxidizing environment to a temperature and for a time to thermally oxidize the metal silicide layer overlying said polycrystalline Si to form an upper layer of SiO_2, and to convert the metal silicide layers overlying the SiO_2 layer to a metal rich SiO_2 layer,
exposing the oxidized surface of said substrate to an etchant that selectively etches said metal rich silicon dioxide layer to thereby expose said blanket layer of SiO_2.

2. The method of claim 1 wherein said metal of said refractory metal silicide is a metal selected from the group consisting of tungsten, niobium, molybdenum and tantalum, and mixtures thereof.

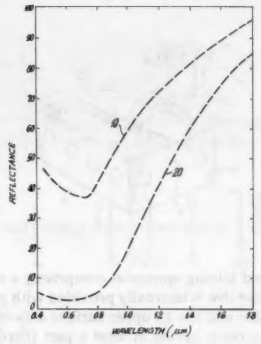
8. The method of claim 2 wherein subsequent to the etching of the oxidized metal silicide, the sidewalls of the remaining metal silicide areas are thermally oxidized to form SiO_2 films on the sidewalls.

4,285,762

PLASMA ETCHING OF AMORPHOUS SILICON (SE-35)

Theodore D. Moustakas, Berkeley Heights, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 31, 1979, Ser. No. 108,417
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—643 **10 Claims**



1. A method for selectively etching amorphous silicon comprising:
(a) depositing a layer of amorphous silicon into a substrate;
(b) heating said layer to a temperature between about 150° C. and about 350° C. and concurrently exposing said silicon layer to an ionized plasma containing hydrogen wherein the exposed silicon is etched.

4,285,763

REACTIVE ION ETCHING OF III-V SEMICONDUCTOR COMPOUNDS

Larry A. Coldren, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 29, 1980, Ser. No. 116,541
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—643 **3 Claims**

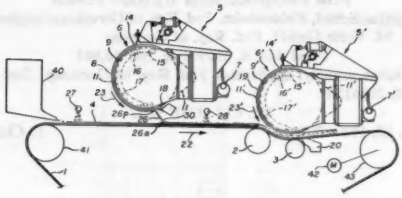
1. A process for etching InP, GaAs and their alloys in which a plasma is ignited between two electrodes and the substrates are placed on the cathode electrode to which rf power is applied,
characterized in that
the gas is a mixture of Cl_2 and O_2 maintained at a pressure of between 1–10 millitorr, and the rf power is applied with a power density of between 0.1–1.0 watts/cm^2 of cathode area.

4,285,764

METHOD AND APPARATUS FOR PRODUCING CORRUGATED COMBINED BOARD

Nazzareno Salvai, S. Pietro Val Lemina, Italy, assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 9, 1979, Ser. No. 28,279
Claims priority, application Italy, Apr. 11, 1978, 67801 A/78
Int. Cl.³ B31F *1/20*
U.S. Cl. 162—132 6 Claims



1. Apparatus for the continuous production of multi-ply corrugated combined board, having at least a bottom linerboard and a top linerboard with an intermediate corrugating medium from corresponding slurries of aqueous pulp fiber stock, comprising, in combination:

a looped foraminous forming wire for traveling and receiving an aqueous slurry of pulp fibers to form a bottom linerboard thereon;

means for supplying an aqueous slurry of pulp fibers to the foraminous forming wire;

means for forming a corrugating medium from a dilute aqueous slurry of pulp fibers, said means including a first foraminous surface for traveling, a former for supplying the aqueous slurry of pulp fibers to the first foraminous surface and means for removing the water from the slurry of pulp fibers through the first foraminous surface to form the corrugating medium having an inner surface disposed thereon and an outer surface; means for receiving the corrugating medium traveling on the first foraminous surface and producing corrugations therein, said means for producing the corrugations being disposed relative to the forming wire such that the outer surface of the traveling corrugating medium is thereafter brought into contact with the bottom linerboard;

means for forming a top linerboard from a dilute aqueous slurry of pulp fibers, said means including a second foraminous surface for traveling, a former for supplying the aqueous slurry of pulp fibers to the second foraminous surface and means for removing the water from the slurry of pulp fibers through the second foraminous surface to form the top linerboard having an inner surface disposed thereon and an outer surface, said second foraminous surface disposed to urge the outer surface of the top linerboard into contact with the corrugating medium web;

means for bonding the corrugating medium to the top and bottom linerboards to thereby form the corrugated combined board on the forming wire from aqueous slurries of pulp fibers;

said first foraminous surface travels at a linear speed which is faster than the linear speed of the forming wire whereby the corrugated corrugating medium is traveling at the same speed as the bottom linerboard when they come into contact.

4,285,765

SLIME CONTROL COMPOSITIONS AND METHODS OF USING THE SAME

John D. Pera, and Betty S. Johnson, both of Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Sep. 24, 1980, Ser. No. 190,125
Int. Cl.³ D21H *3/02*
U.S. Cl. 162—161 8 Claims

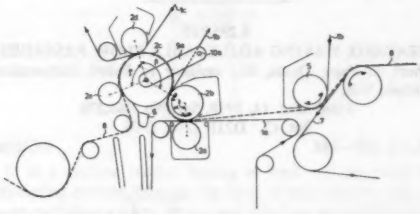
1. A synergistic microbiocidal composition comprising 10 to 90 parts by weight of 2-(thiocyanomethylthio)benzothiazole and 90 to 10 parts by weight of 2,2-dibromo-3-nitrilopropionamide.

4,285,766

PRESS METHOD IN A PAPER MACHINE

Matti Kankaanpaa, Espoo, Finland, assignor to Valmet OY, Finland

Continuation-in-part of Ser. No. 790,209, Apr. 25, 1977, Division of Ser. No. 310,805, Nov. 30, 1972, abandoned. This application Oct. 5, 1979, Ser. No. 82,063
Int. Cl.³ D21F *1/32*
U.S. Cl. 162—199 20 Claims



1. A method in a paper machine press section for dewatering a wet paper or paperboard web by threading the web through at least three nips of the press section, the web being supported by the surface of a felt or a roll at all times, comprising the steps of:

detaching the web from the paper machine forming wire by means of a first felt loop and a pick-up roll operating within said first felt, and adhering the web onto the lower outer surface of said first felt loop by means of suction prevailing in the suction sector of said pick-up roll;

transferring the web which adheres to the lower surface of said first felt loop primarily by adhesion forces and without any substantial support from below to a first dewatering press nip of the press section which nip is formed by and between an upper foraminous suction roll and a second water receiving lower roll;

threading a second felt loop into the first dewatering press nip so that said second felt comes into contact with the web adhered on the first felt not until substantially in region of said first press nip;

pressing the web in the first dewatering press nip between the first felt and the second felt while applying between the press rolls a first linear pressure to dewater the web simultaneously in two directions through both sides of the web;

detaching the web from contacting the second felt by means of suction prevailing inside said upper suction roll;

treating the second felt after having left the first nip by felt conditioning means and threading it back to the first nip in said manner;

adhering the web by suction on the surface of the first felt wrapping said suction roll on a sector following the first nip, said sector corresponding to a central angle of 90 to 160 degress of the suction roll and so transferring the web to a second dewatering press nip formed by said suction press roll and by a smooth surface plain press roll;

pressing the web in said second nip using a second linear

pressure so as to dewater the web through the one side facing the first felt;

detaching the web from the first felt utilizing the adhesion force of the surface of said plain press roll and adhering the web on last mentioned surface;

treating the first felt after having left the second nip by its felt conditioning means and threading the first felt back to wrap said pick-up roll;

transferring the web adhered on the surface of said plain press roll, to a third nip formed by said plain press roll and a fourth press roll which fourth roll is a water receiving roll so that the travel of the web while proceeding adhered to the plain roll surface from the second nip to the third nip corresponds to a central angle of 70–160 degrees of the plain roll;

threading a third felt into said third nip and pressing the web in said third dewatering press nip using a third linear pressure so as to dewater the web through its one side facing the third felt; and

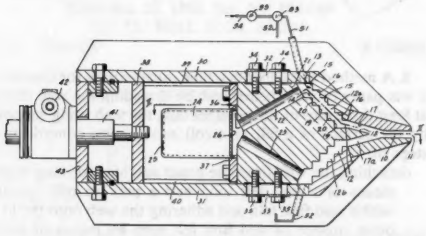
transferring the web, which beginning from the second nip, is continuously adhered to the surface of said plain press roll after said third nip, to a following web processing phase.

4,285,767

HEADBOX HAVING ADJUSTABLE FLOW PASSAGES

Robert E. Page, Davis, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Mar. 13, 1978, Ser. No. 886,278
Int. Cl.³ D21F *1/02, 1/06*
U.S. Cl. 162—216 **4 Claims**



1. A headbox for supplying a stock such as a generated liquid foam suspension of fibers or a high consistency paper making stock to a forming surface for forming a fibrous web comprising in combination:

an elongate slice nozzle having an opening through which a stock is ejected for being deposited on a traveling forming surface;

a slice chamber leading to the slice nozzle and having first and second slice flow passages converging toward said slice nozzle, and through which passages the stock flows to said slice nozzle;

a movable block in said slice chamber having convergently related surfaces defining said flow passages on each side of the block between the block and complementary stationary chamber wall portions;

each of said convergently related surfaces and complementary stationary chamber wall portions in each of said flow passages having complementary modulating step configuration cooperative to define a series of restrictions in each flow passage so that the stock flows in continuously changing directions through each of the flow passages for the continuous regeneration of foam or fine scale turbulence of high consistency stock;

means for moving said block rectilinearly for increasing or decreasing the cross sectional flow area of each of said slice flow passages and said restrictions substantially equally for increasing or decreasing the flow volume therethrough;

header chamber means connected to supply stock to said passages; and

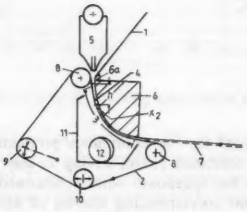
supply passage means extending from said header chamber means through said movable block and communicating with said flow passages upstream from said modulating step configuration.

4,285,768

APPARATUS FOR DEWATERING FIBER SUSPENSION FOR PRODUCING A WEB OF FIBER

Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,661
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826158
Int. Cl.³ D21F *9/00*
U.S. Cl. 162—301 **10 Claims**



1. Apparatus for dewatering a suspension of fibers comprising:

a first strip movable through a dewatering region; first support means for moving said first strip on a convex pathway through the dewatering region and for maintaining longitudinal tension of said first strip; said first support means comprising a stationary support which is convexly curved and over and with respect to which said first strip is moved; said first support means including means for moving said first strip over said stationary support;

a second strip movable together with said first strip through the dewatering region; second support means for moving said second strip along a concave pathway through the dewatering region and for moving said second strip spaced from said first strip and for also maintaining the longitudinal tension of said second strip;

at least one said strip being water permeable;

for eliminating pressure gradients in the suspension held between said strips passing through the dewatering region, said second support means being shaped for maintaining the radius of curvature of said second strip at a value at which the radius of curvature at every point along said second strip substantially is:

$$R\,[m] = \frac{S\left[\frac{N}{m}\right]}{p_o\,[Pa] + \rho\left[\frac{kg}{m^3}\right] \cdot g\left[\frac{m}{sec^2}\right] \cdot h\,[m]}$$

where S is the tension of said second strip established by said second support means therefor; p_o is the dynamic pressure of the suspension in the intake between said strips where the suspension first contacts both said strips; ρ is the density of the suspension; g is the acceleration due to gravity; h is the actual vertical height or distance between the point on said second strip at which the radius is being measured and the point on

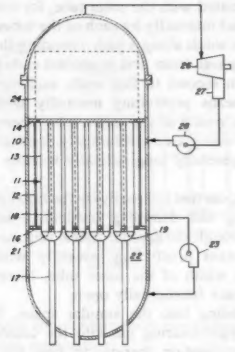
said second strip at which the suspension first contacts both said strips.

4,285,769

CONTROL CELL NUCLEAR REACTOR CORE

Steven R. Specker, San Jose; Craig D. Sawyer, Los Gatos; Russell L. Crowther, Saratoga, all of Calif.; Bennett J. Gitnick, Rockville, Md.; Kenneth V. Walters, Kennewick, Wash.; Robert E. Brown, and Larry E. Fennern, both of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Oct. 19, 1978, Ser. No. 952,846
Int. Cl.³ G21C *19/20*
U.S. Cl. 176—30 **33 Claims**



1. A method of fueling and operating a nuclear reactor core having a plurality of cells wherein each cell includes a plurality of individually replaceable fuel assemblies surrounding a selectively insertable control rod and wherein said reactor is shut down after each successive cycle of periodic operation for replacement of a fraction of the fuel assemblies of said core, comprising the steps of:

(1) designating a pattern of two kinds of cells in said core, namely, a set of control cells and a set of non-control cells wherein said control cells are separated from one another by at least one non-control cell;

(2) placing fuel assemblies of relatively high reactivity fuel in said non-control cells, the design thereof being particularly adapted for subsequent use in said control cells, said higher reactivity being sufficient for a residence time of said fuel assemblies in said core of n cycles of operation (n being greater than 1);

(3) placing fuel assemblies in said control cells of fuel of lower reactivity than that of said non-control cells, the design thereof being particularly adapted for use in said control cells;

(4) operating said reactor core throughout a cycle of operation with the control rods of said non-control cells substantially withdrawn from said core and with the control rods of at least some of said control cells selectively inserted in said core to control the power level thereof;

(5) shutting down said reactor for refueling of said core at the end of said cycle;

(6) removing all of the fuel assemblies from each of said control cells;

(7) replacing all of the fuel assemblies removed from said control cells with irradiated fuel assemblies moved from said non-control cells which fuel assemblies have resided in said core n−1 cycles;

(8) inserting in said non-control cells unirradiated fuel assemblies at least equal in number to the irradiated fuel assemblies moved into said control cells, the enrichment of said unirradiated fuel assemblies providing a reactivity sufficient for a residence time in said core of n cycles of operation; and

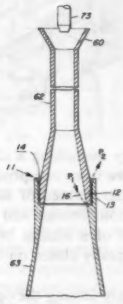
(9) operating said reactor core through successive cycles of operation in accordance with steps (4)–(8).

4,285,770

JET PUMP WITH LABYRINTH SEAL

Lawrence L. Chi, Fremont, and Alvydas A. Kudirka, La Crescenta, both of Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jul. 12, 1979, Ser. No. 56,813
Int. Cl.³ G21C *19/28*
U.S. Cl. 176—65 **3 Claims**



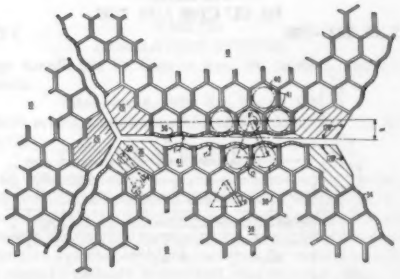
1. In a nuclear reactor having at least one jet pump for circulating coolant through the core of said reactor, said jet pump including a mixer section and a diffuser section joined by a slip joint having an annular clearance space, the improvement comprising a series of spaced cavities forming a labyrinth seal in said annular space to reduce leakage flow of coolant through said space whereby flow induced vibration of said jet pump is reduced to an acceptable level.

4,285,771

NUCLEAR CORE AND FUEL ASSEMBLIES

Robert E. Downs, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 22, 1979, Ser. No. 13,939
Int. Cl.³ G21C *3/30*
U.S. Cl. 176—75 **13 Claims**



1. An assembly for a core of a fast flux fluid cooled nuclear reactor comprising a plurality of elongated coextending rods, having nuclear material, said rods being arranged in a first array and a plurality of support members generally coextensive with said rods being arranged in a second array, said first and second arrays being rotated a preselected angle relative to one another.

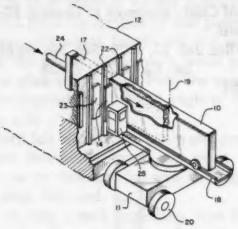
4,285,772
METHOD AND APPARATUS FOR HANDLNG AND DRY QUENCHING COKE

Edward S. Kress, Grace La., Brimfield, Ill. 61517

Continuation-in-part of Ser. No. 9,784, Feb. 6, 1979, abandoned. This application Jan. 23, 1980, Ser. No. 110,351

Int. Cl.³ C10B *39/02, 39/14, 39/12*

U.S. Cl. 201—39 **12 Claims**



1. A coke box for dry quenching a charge of coke from a horizontal discharge coke oven comprising:

(a) a receiving chamber formed of sheet metal panels and having a cross section, volume and surface area substantially equal to that of a charge of coke, the receiving chamber being integrally closed on five sides and open on one end;

(b) means for selectively closing the open end of the receiving chamber for enclosing the coke within the coke box to substantially isolate the coke from atmospheric oxygen and external cooling media; and

(c) means for distributing cooling media over the surfaces of the receiving chamber for indirectly cooling an enclosed charge of coke through the surfaces of the receiving chamber.

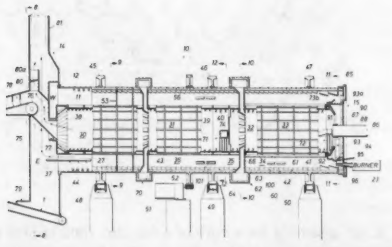
4,285,773
APPARATUS AND PROCESS FOR RECOVERY OF HYDROCARBON FROM INORGANIC HOST MATERIALS

William Taciuk, Calgary, Canada, assignor to Alberta Oil Sands Technology and Research Authority, Edmonton, Canada

Continuation of Ser. No. 34,098, Apr. 27, 1979, abandoned, which is a continuation of Ser. No. 828,119, Aug. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 603,044, Aug. 8, 1975, abandoned. This application Oct. 25, 1979, Ser. No. 88,133

Int. Cl.³ C10B *1/10, 7/00*

U.S. Cl. 202—100 **1 Claim**



1. An apparatus for thermally treating a heavy hydrocarbon-containing liquid, said apparatus containing a charge of particulate solids, comprising:

a substantially horizontal inner tube defining an inner processing area therein extending throughout its length, said area being a substantially open cylindrical space free of auger-type advancing means;

an outer tube circumscribing the inner tube along a substantial portion of the latter's length, said tubes being rigidly connected for rotation together and cooperating to form between them a substantially open annular space free of auger-type advancing means, said tubes having corresponding first and second ends, the annular space providing a combustion zone at the second end;

a stationary first end assembly connected with the outer tube for substantially sealing the latter's first end;

a stationary second end assembly connected with the outer tube for substantially sealing the latter's second end;

means, associated with the outer tube, for rotatably supporting the tubes;

means, associated with the outer tube, for rotating the tubes;

means, carried internally by each of the tubes, for advancing particulate solids along a path extending through the inner processing area from first to second ends and the annular space from second to first ends, said means comprising surface means protruding inwardly without extending across the width of the inner tube, thereby leaving the inner processing area substantially open, said means being oriented generally longitudinally relative to the tube involved;

lifting means, carried internally by the outer tube, for repeatedly lifting and dropping particulate solids being advanced through the annular space, said means comprising surface means protruding inwardly without extending across the width of the inner tube, thereby leaving the annular space substantially open;

means, extending into the annular space, for introducing heated oxygen-bearing gas into the combustion zone to support combustion therein, to heat the solids passing therethrough, and to supply supplemental heat to said solids if required;

transfer means, connected with the inner tube at its second end, for transferring particulate solids from the inner processing area to the combustion zone, said means being adapted to cooperate with the solids being transferred to prevent significant gas movement between said area and said zone;

end means, connected with the inner tube at its first end, for sealing said end, said end means including recycle means, connecting the first end of the annular space with the first end of the inner processing area, for returning at least a portion of the particulate solids, being advanced through the annular space, back into said area, said recycle means being adapted to cooperate with the solids to prevent significant gas movement between the inner processing area and the annular space;

means, extending through one of the end assemblies, for introducing solids as required;

means, extending through one of the end assemblies into the inner processing area, for depositing the liquid onto particulate solids being advanced therethrough;

first means, extending through one of the end assemblies into the inner processing area, for withdrawing hydrocarbon vapors from said area;

second means, separate from the first means and associated with one of the end assemblies, for withdrawing combustion gases from the annular space and maintaining therein a negative pressure relative to atmospheric pressure;

and means for controlling the first and second withdrawal means to maintain substantially equal pressures in the inner processing area and the annular space;

whereby coke, generated in the inner processing area and carried by the particulate solids, may be burned in the combustion zone while being lifted and dropped to heat said solids, and the product hot solids may be recycled into the inner processing area wherein they are gently tumbled by rotation of the inner tube to vaporize hydrocarbons deposited thereon and form coke, and the atmospheres in the inner area and the combustion zone are kept

substantially segregated by a combination of the withdrawing means and the transfer and recycle means.

4,285,774

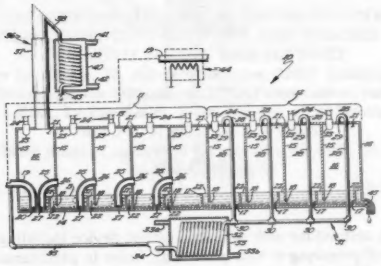
MICROWAVE DISTILLATION

A. H. J. Rajamannan, Minneapolis, Minn., assignor to Agrohol Systems, Inc., Minn.

Filed Jun. 30, 1980, Ser. No. 164,250

Int. Cl.³ B01D *3/16*; C07C *31/08*

U.S. Cl. 202—154 **3 Claims**



1. An apparatus for continuously producing concentrated alcohol from beer, comprising:

a plurality of similar concentrator cells and a plurality of similar salvage cells arranged in side-by-side inline relation and each cell being adapted to contain a predetermined amount of liquid beer, one of said concentrator cells being disposed adjacent one of said salvage cells,

a supply conduit connected to the first upstream concentrator cell for supplying liquid beer thereto,

means defining a passage between adjacent concentrator cells, between adjacent salvage cells and between said one concentrator and salvage cells to permit liquid beer to flow from each cell to the next adjacent downstream cell in response to the volume of beer reaching a predetermined level in each cell,

a plurality of microwave units each being positioned in one of said concentrator and salvage cells, each unit producing microwave emissions to heat the beer and cause the alcohol to boil and vaporize,

means defining a fluid conduit between each adjacent concentrator cell, said fluid conduit having one end thereof located above the level of beer in one concentrator cell and having the other end thereof located below the level of beer in the adjacent upstream concentrator cell whereby gaseous alcohol be bubbled continuously in an upstream direction through the fluid conduits and through the liquid beer for collection into the first concentrator cell,

a plurality of collector pipes each communicating with one of said salvage cells and with each other for collecting gaseous alcohol and water vapor from said salvage cells, a conduit for returning said gaseous alcohol and water vapor for recycling through the concentrator cells,

a concentrator column communicating with the upper end of said first upstream concentrator cells to concentrate the gaseous alcohol emanating from said first concentrator cell,

and a condenser for condensing the gaseous alcohol to a liquid solution containing approximately 95% alcohol and approximately 5% water.

4,285,775

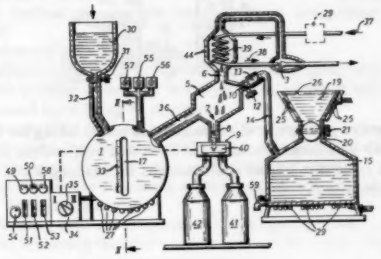
APPARATUS FOR THE RECOVERY OF XYLENOL AND/OR PARAFFIN

Wolfgang Hamann, Felsenkellerweg 3,, D-6333 Braunfels, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 155,957

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—160 **10 Claims**



1. An apparatus for the recovery of xylenol mixed with water, alcohol, tissue or other substances and for the recovery of paraffin and similar substances mixed with xylenol and solids comprising a first evaporator tank for receiving a xylenol mixture, a second evaporator tank having an inlet and a funnel with a filter connected to said inlet to receive paraffin having foreign matter therein, said funnel having means thereon for heating said funnel to melt solid paraffin therein, means for selectively controlling the temperature and pressure in said first and second evaporator tanks, a condenser connected to said first evaporator tank and selectively connected to said second evaporator tank to receive vapors from said evaporator tanks, a distributor having a selectively operable control valve connected to said condenser to receive condensate therefrom, first and second collector tanks connected to said distributor, means for selectively operating said control valve to connect one of said first and second collector tanks to said condenser through said distributor so that each of the collector tanks will receive selectively a predetermined condensate, and a control unit having a two-stage control dial, one of said stages adjusts the temperature and pressure in said first evaporator tank to evaporator water and alcohol and to open the control to one of said collector tanks, the second of said stages adjusts the temperature and pressure in said first evaporator tank to evaporate xylenol and to open the control valve to the other of said collector tanks.

4,285,776

DESALATION SYSTEM

George Atwell, 891 St. Gabriel Ave., St. Norbert, Manitoba, Canada

Filed Nov. 6, 1979, Ser. No. 91,704

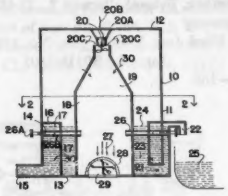
Claims priority, application United Kingdom, May 17, 1978, 20135/78

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—187 **3 Claims**

1. A desalination system for contaminated water comprising in combination a sealed enclosure, an evaporation chamber within said enclosure, a vacuum pump connected between said evaporation chamber and said enclosure for maintaining constant negative pressure within said chamber and means conveying the contaminated water to the interior of said evaporation chamber, evaporated water vapour passing through said vacuum pump and condensing within said enclosure externally of said evaporation chamber and discharge means in said enclosure for the condensed water collected therein, said evaporation chamber being concentrically located within said enclosure, said means conveying the contaminated water to said evaporation chamber including a tank within said enclosure

surrounding said evaporation chamber and spaced therefrom, means to selectively remove solids from the base of said evaporation chamber while substantially maintaining said constant



negative pressure, said last mentioned means taking the form of an air lock communicating between said evaporation chamber and externally of said enclosure and maintaining a seal to said evaporation chamber.

4,285,777

PROCESS FOR THE PURIFICATION OF BENZALDEHYDE

Cornelis Jongsma, Oirsbeek, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Feb. 28, 1980, Ser. No. 125,662

Claims priority, application Netherlands, Mar. 2, 1979, 7901670

Int. Cl.³ B01D *3/34*

U.S. Cl. 203—32 **13 Claims**

1. Process for the purification of impure benzaldehyde including odiferous impurities comprising the steps of:

(a) treating impure benzaldehyde including odiferous impurities with hydrogen in the presence of a hydrogenation catalyst at conditions of temperature and pressure sufficient to selectively hydrogenate said impurities without hydrogenating said benzaldehyde; and

(b) distilling said treated benzaldehyde.

4,285,778

PROCESS FOR THE MANUFACTURE OF HALOGENATED HYDROCARBONS

John Crosby, Altrincham, and Bernard W. H. Terry, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 15, 1980, Ser. No. 149,987

Claims priority, application United Kingdom, Jul. 13, 1979, 24523/79

Int. Cl.³ B01D *3/10*

U.S. Cl. 203—48 **7 Claims**

1. A process for the manufacture of 2,2-dichloro-5-methyl-1,1,1-trifluorohex-4-ene which comprises continuously distilling a mixture of 5-methyl-2,2,4-trichloro-1,1,1-trifluorohexane, dimethylformamide and lithium bromide, collecting a distillate comprising dimethylformamide, 5-methyl-2,2,4-trichloro-1,1,1-trifluorohexane, 2,2-dichloro-5-methyl-1,1,1-trifluorohex-4-ene and hydrohalide salts of dimethylene, precipitating the chlorofluorocarbons from the distillate by adding water to the distillate and isolating the 2,2-dichloro-5-methyl-1,1,1-trifluorohex-4-ene from the precipitated chlorofluorocarbon mixture by distilling said mixture.

4,285,779

METHOD OF MAKING A FLUID CIRCUIT DEVICE

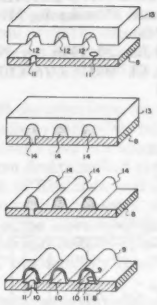
Tatsuhide Shiga, Zushi; Yoshihiro Tsuruoka, and Motoo Suzuki, both of Yokohama, all of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 9, 1979, Ser. No. 37,421

Claims priority, application Japan, May 24, 1978, 53/60917

Int. Cl.³ C25D *1/02, 5/02*

U.S. Cl. 204—9 **5 Claims**



1. A method for making a fluid circuit device including the steps of preparing a base plate with holes in predetermined locations, preparing a mould in which grooves are formed corresponding in size, shape and pattern of the fluid circuit, placing the mould on the surface of the base plate in a predetermined position with the holes in the base plate being aligned with respective ones of the grooves in the mould, filling the grooves in the mould with a soluble substance through the holes in the base plate, allowing the soluble substance to soldify, removing the mould from the base plate while leaving the soluble substance on the base plate, depositing a metallic plating on the surface of the solidified soluble substance and the base plate and removing the soluble substance from the base plate through the holes in the base plate.

4,285,780

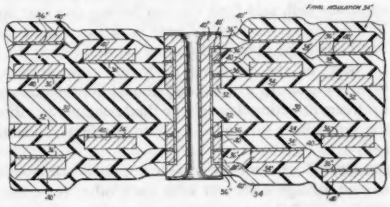
METHOD OF MAKING A MULTI-LEVEL CIRCUIT BOARD

Herbert I. Schachter, 86 Campbell St., New Hyde Park, Long Island, N.Y. 11040

Filed Nov. 2, 1978, Ser. No. 957,291

Int. Cl.³ C25D *5/02*

U.S. Cl. 204—15 **8 Claims**



1. A method for making a multi-level printed circuit board comprising the steps of: forming a first level of circuitry on at least one side of a substrate, applying an insulating covering or layer over the entire surface of said substrate and circuitry except in certain locations where no covering or layer is applied so as to define a first number of predetermined areas, forming a thin adherent conductive coating over all exposed surfaces, applying a temporary mask over the conductive coating except in a second number of predetermined areas,

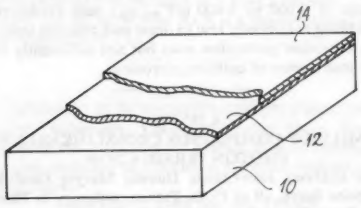
which define a circuit pattern on a second level on said side of said substrate, forming in one step both copper conductive areas including at least some copper circuitry in said second predetermined areas, and where said predetermined areas at any level are coincidental, metallurgical bonds creating interconnections between levels of circuitry; and removing said temporary mask and said adherent conductive coating directly underlying said mask.

4,285,781

METAL SUPPORT FOR AN ELECTRONIC COMPONENT INTERCONNECTION NETWORK AND PROCESS FOR MANUFACTURING THIS SUPPORT

Jean Le Rouzic, 23, rue de Bourgogne, 22300 Lannion; Loic Demeure, Route de Pleumeur, 22700 Perros-Guirec, and Yvon Le Roux, Le Rhu-Servel, 22300 Lannion, all of France

Filed Jun. 3, 1980, Ser. No. 156,263
Claims priority, application France, Jun. 15, 1979, 79 15398
Int. Cl.³ C25D *11/04*
U.S. Cl. 204—15 **8 Claims**



1. In a support for an electronic component interconnection network, a metal substrate coated with a layer of aluminium of granular structure, whose thickness may vary between a few microns and a few tens of microns, this layer being anodized.

4,285,782

METHOD FOR PROVIDING URANIUM WITH A PROTECTIVE COPPER COATING

Forrest B. Waldrop, Powell, and Edward Jones, Knoxville, both of Tenn., assignors to The United States of America as represented by The United States Department of Energy, Washington, D.C.

Filed Aug. 6, 1980, Ser. No. 175,813
Int. Cl.³ C25D *5/32*
U.S. Cl. 204—32 R **6 Claims**

1. A method for providing an adherent, protective coating of copper on a uranium article comprising the steps of removing oxides and other surface contaminants from the surface of the uranium article, etching the uranium article in a chloride ion bath, pickling the uranium article in an acid bath, electrodepositing a flash layer of porous copper on the uranium article in a copper cyanide bath, heating the copper-layered uranium article in air or an inert atmosphere to a temperature below the melting temperature of copper and sufficient to volatilize and drive off through the porous flash layer volatile material entrapped under the flash layer, and thereafter electrodepositing on the flash layer of copper an adherent and essentially nonporous layer of copper in a bright acid copper bath.

4,285,783

COATING FOR METAL SHELVING AND METHOD OF APPLYING SAME

Gerald J. Giza, Wilkes-Barre, and John H. Welsch, Moscow, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Filed Jul. 6, 1979, Ser. No. 55,341
Int. Cl.³ C25D *5/48*
U.S. Cl. 204—35 N **11 Claims**

1. A method of coating a metal shelving, comprising the steps of:

(a) cleaning a metal shelving surface;

(b) electrodepositing, in succession, on said metal surface two metallic layers, the first layer being of nickel and the second layer being of chromium;

(c) treating the thus deposited chromium layer by means to enhance adhesion between the chromium layer and a final outer layer of epoxy resin, said means including:

(i) cleaning the chromium surface with an iron phosphate-detergent mixture;

(ii) spray cold water rinsing the thus cleaned surface; and

(iii) subjecting the cold water rinsed surface to a hot water rinse;

(d) applying onto the thus treated chromium layer an epoxy resin of low opacity; and

(e) curing the said resin to obtain said coating on said metal shelving.

4,285,784

PROCESS OF ELECTROPLATING A PLATINUM-RHODIUM ALLOY COATING

David R. Flinn, Fort Washington, and Cheryl L. Manger, Laurel, both of Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 10, 1980, Ser. No. 168,822
Int. Cl.³ C25D *3/66*
U.S. Cl. 204—39 **10 Claims**

1. A process of electroplating a platinum-rhodium alloy coating of predetermined composition and predetermined thickness on a metal substrate, the composition being substantially uniform throughout the coating, said process comprising the steps of

(a) immersing a first anode made of platinum metal and immersing a selective ion transport membrane containing a cathode and a first portion of a moisture-free, molten cyanide bath, into a second portion of the molten cyanide bath; said second portion being a selected quantity; and the molten cyanide bath containing a cyanide salt selected from the group consisting of sodium cyanide and a mixture of potassium cyanide and sodium cyanide;

(b) electrolytically dissolving the anodic platinum metal into said second portion of the molten cyanide bath, using a current density of from about 1 to less than 25 ma/cm^2, whereby the resulting platinum bath contains a predetermined quantity of said platinum metal;

(c) repeating the procedure of steps (a) and (b) employing rhodium metal in place of platinum metal, and a current density of from about 1 to less than 50 ma/cm^2, whereby the resulting rhodium bath contains a predetermined quantity of said rhodium metal;

(d) combining a selected weight of said platinum bath with a selected weight of said rhodium bath to produce a mixed bath having a predetermined ratio of platinum to rhodium;

(e) immersing a second anode made of platinum or rhodium metal, a metal cathode and a stable reference electrode into the molten mixed bath; said metal cathode functioning as said metal substrate; and

(f) without agitating the molten mixed bath, electroplating platinum and rhodium onto said metal cathode, using a predetermined electrical charge, and alternating said platinum anode with said rhodium anode, as said second anode, while monitoring and controlling the deposition

potential of said metal cathode, whereby there is obtained said platinum-rhodium alloy coating, said coating substantially corresponding in composition to the metal composition of the molten mixed bath;

wherein each of said steps is carried out in a dry, inert gas environment.

4,285,785

METAL PRODUCING METHOD

Daniel A. Sullivan, Jr., Upper Burrell Township, Westmoreland County, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 18, 1979, Ser. No. 85,856
Int. Cl.³ C25C *3/00, 3/04, 3/06, 3/26*
U.S. Cl. 204—64 R **6 Claims**

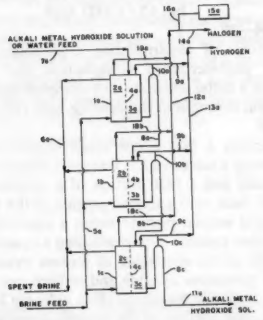
1. In a method for producing metal by electrolysis of a metal compound dissolved in a molten solvent, electrolysis of the metal compound yielding metal and gas, the improvement comprising carrying out the electrolysis in a bipolar mode with a bed of conductive pebbles to create a three phase system of metal, gas, and molten solvent.

4,285,786

APPARATUS AND METHOD OF MONITORING TEMPERATURE IN A MULTI-CELL ELECTROLYZER

Eric H. Larson, Marcellus, N.Y., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 9, 1980, Ser. No. 148,344
Int. Cl.³ C25B *1/34, 1/02, 9/00*
U.S. Cl. 204—98 **16 Claims**



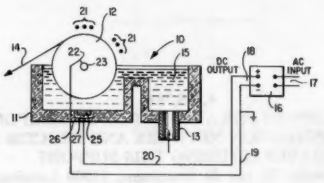
1. In a process for making halogen gas and alkali metal hydroxide by electrolysis of an aqueous alkali metal halide brine in a bank of two or more electrolytic cells, each cell containing an anode and a cathode and being separated into an anode compartment and a cathode compartment, wherein (a) the halide brine is introduced into an anode compartment; (b) halogen gas produced at an anode is withdrawn from the anode compartments by a common halogen gas collection means; (c) depleted halide brine is removed from the anode compartments through common depleted brine collection means; (d) water or dilute alkali metal hydroxide is fed to a cathode compartment; (e) alkali metal hydroxide is withdrawn through a common alkali metal hydroxide collection means from the cathode compartments; and (f) hydrogen gas produced at a cathode is withdrawn through a common hydrogen gas collection means, the improvement which comprises monitoring temperature in the bank by monitoring a output signal of a single temperature sensing means placed in the common gas collection means for hydrogen or halogen gas.

4,285,787

ELECTROCHEMICAL CORROSION PROTECTION OF STAINLESS STEEL BLEACH PLANT WASHERS

Andrew Garner, Pointe Claire, Canada, and Laurent H. Laliberte, Mobile, Ala., assignors to Pulp and Paper Research Institute of Canada, Pointe Claire, Canada

Filed Mar. 20, 1980, Ser. No. 132,011
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—147 **4 Claims**



1. A method of electrochemically protecting by cathodic polarization a partly submersed, rotating, stainless steel drum in a vat containing a corrosive oxidizing chloride containing bleach liquor which comprises impressing a protection potential to said stainless steel drum at a predetermined voltage in the range of -600 to $+400$ $mV_{Ag/AgCl}$, said predetermined voltage being sufficiently low to draw said stainless steel into a passive corrosion protection zone but not sufficiently low to draw it into a zone of uniform corrosion.

4,285,788

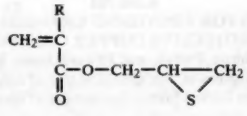
FAMILY OF COMPOUNDS CROSSLINKABLE BY PHOTON IRRADIATION

Armand Eranian; Jean-Claude Dubois; Maryse Gazard, and Francoise Barre, all of Paris, France, assignors to Thomson-CSF, Paris, France

Division of Ser. No. 882,169, Feb. 28, 1978. This application Aug. 20, 1979, Ser. No. 67,905
Claims priority, application France, Mar. 4, 1977, 77 06441
Int. Cl.³ C08F *8/00, 8/34;* C08J *3/24*
U.S. Cl. 204—159.16 **8 Claims**

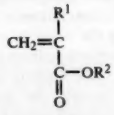
1. A copolymer composition crosslinkable by ultraviolet light rays into a 3-dimensional network, said composition comprising, as the cross-linkable monomers:

(i) from 40 to 80% by weight of 2,3 epithiopropyl alkyl acrylate monomer units of the formula:



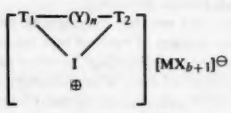
wherein R is hydrogen or a C_1 to C_4 alkyl; and

(ii) from 60 to 20% by weight of vinyl monomer units of the formula:

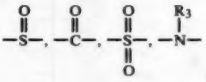


wherein R^1 is hydrogen or an alkyl group of the formula C_nH_{2n+1}, where n is an integer from 1 to 10 and R^2 is a C_1 to C_5 alkyl group, together with

(iii) an ultraviolet-initiating amount of an aryl iodonium salt of the formula:



wherein n is 0 or 1, T_1 and T_2, which are the same or different, are aromatic groups containing from 4 to 20 carbon atoms, Y is:



where R_3 is hydrogen, alkyl or acyl or

where R_4 and R_5, which may be the same or different, are hydrogen, a C_1 to X_4 alkyl or a C_2–C_4 alkenyl,

M is Fe, Sn, Sb, Bi, B, P or As X is a halogen atom, and b is an integer from 1 to 5.

4,285,789

CATIONIC ELECTRODEPOSITION PROCESS

Yoshimichi Kobayashi, Yokohama; Yukio Tsuge, Kawasaki; Susumu Hirako, and Hideaki Kiniwa, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,621

Claims priority, application Japan, Feb. 26, 1979, 54/21665

Int. Cl.³ C25D *13/06*

U.S. Cl. 204—181 C **9 Claims**

1. In a cationic electrodeposition for coating an electric conductive substrate as a cathode with an electrodeposition-coating composition containing a resin; an improvement characterized in that said resin is a resin having hydroxyl group, tertiary amino groups, quaternary ammonium groups and blocked isocyanate groups which are reactive with hydroxyl group at an elevated temperature which is obtained by reacting

(a) a polyisocyanate;

(b) a polyhydroxyl compound;

(c) a hydroxyl compound having tertiary amino group;

(d) a hydroxyl compound having quaternary ammonium group; and

(e) a monofunctional blocking agent, under conditions such that hydroxyl group of (b), (c) and (d) and the blocking group of (e) react with isocyanate group of (a) and the reaction product of the isocyanate group and of (e) is not disassociated, the proportions of (c) and (d) being such that the ratio of nitrogen atoms of the quaternary ammonium groups are 0.1 to 95 mole % of total nitrogen atoms of the tertiary amino groups and quaternary ammonium groups.

4,285,790

SENSOR FOR OXYGEN-COMBUSTIBLES GAS MIXTURES

Arnold O. Isenberg, Forest Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 20, 1980, Ser. No. 132,197

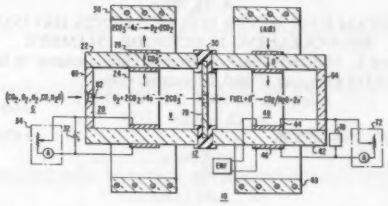
Int. Cl.³ G01N *27/56, 27/58*

U.S. Cl. 204—195 R **8 Claims**

1. An oxygen sensor apparatus for measuring the oxygen content of an oxygen/combustibles gas mixture wherein said gas mixture includes CO_2, or the combination of CO_2 and water vapor, in excess of O_2, comprising:

a molten carbonate electrochemical cell including a molten carbonate electrolyte consisting of a eutectic carbonate mixture impregnated in a porous support and first and second electrodes disposed on opposite surfaces of said molten carbonate electrolyte;

means for supplying an oxygen/combustibles gas mixture containing CO_2, or the combination of CO_2 and water vapor, in excess O_2 in contact with the first electrode



surface of said molten carbonate electrolyte, said first electrode being a non-catalytic electrode;

means for transporting CO_2 and a corresponding amount of O_2 from said gas mixture through said molten carbonate electrolyte to the second electrode surface of said molten carbonate electrolyte to deplete the oxygen present in said gas mixture, said transport of CO_2 and O_2 producing a molten carbonate electrochemical cell current; and

means for measuring said cell current as an indication of the oxygen content of said gas mixture.

4,285,791

ELECTRODE SYSTEM

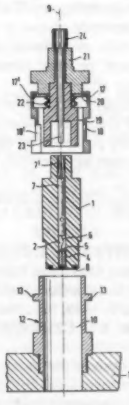
Hartmut Schmidt-Rabenau, Hamburg, and Hans-Werner Berger, Jersbek, both of Fed. Rep. of Germany, assignors to Eppendorf Geratebau Netherler + Hinz GmbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,728

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927361

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—195 M **5 Claims**



1. An electrode system comprising means defining a bore of a measuring chamber, an electrode member which can be introduced into said bore with a selectively sensitive membrane disposed in its front end and an electrical conductor extending from said membrane rearwardly through the elec-

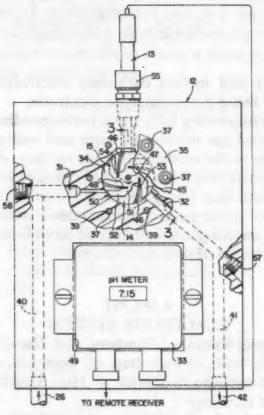
trode member, a holding member which can be engaged with said bore defining means for securing said electrode member upon insertion in said bore, characterized in that said holding member comprises an inner body which engages said electrode member, and a connecting portion which engages said bore defining means and wherein said connecting portion can be moved to a limited extent in the axial direction of said holding member and electrode member against spring pressure and can be rotated about the longitudinal axis of the holding member.

4,285,792

PORTABLE PH METER FOR EFFLUENTS HAVING A SELF-CLEANING ELECTRODE CHAMBER

Edward L. McGandy, Shaker Heights, Ohio, assignor to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Jul. 30, 1980, Ser. No. 173,777
Int. Cl.³ G01N *27/38*
U.S. Cl. 204—195 R **9 Claims**



1. A self-cleaning apparatus for the monitoring of pH in an effluent process stream, comprising:

means for sampling the effluent process stream;

housing means for supporting a pH electrode, said housing means including electrode chamber means into which said pH electrode extends, said electrode chamber means receiving said effluent process stream sample from said means for sampling; and,

means for automatically, continuously cleansing said pH electrode and said electrode chamber means, said means for cleansing entirely powered by the impingement of said effluent process stream sample upon said means for cleansing.

4,285,793

SLIDE-BACK TYPE INTERCELL BUS BAR CONNECTOR

Steven J. Specht, Mentor, Ohio, and Morton S. Kircher, Clearwater, Fla., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 7, 1979, Ser. No. 101,386
Int. Cl.³ C25B *9/04*
U.S. Cl. 204—253 **30 Claims**

1. A cell connector system for electrically connecting and disconnecting a first electrolytic cell adjacent to a second electrolytic cell in series, wherein said system is comprised of:

(a) a cathode terminal attached electrically to said first cell and projecting towards said second cell,

(b) an anode terminal attached electrically to said second cell and projecting towards said cathode terminal,

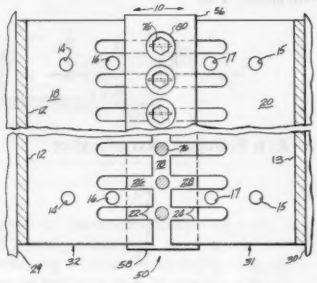
(c) each of said terminals having a top side and a bottom side and an outer portion,

(d) at least one of said terminals having multiple lateral recesses in said outer portion,

(e) a conductive first member overlapping one of said outer sides and said portion of each of said terminals,

(f) a second member overlapping the other of said sides and said outer portion of each of said terminals,

(g) a plurality of fastener means aligned laterally with said recesses for connecting said first member and said second member, and



(1) for pressing said first member and said second member into tight electrical contact with said terminals, whereby current flows between said terminals through said conductive first member, and

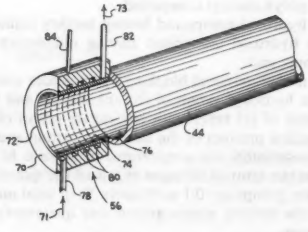
(2) means for sliding said fastening means into said recesses towards one of said electrolytic cells and for moving said members towards one of said electrolytic cells when said members are not pressed into tight electrical contact with said terminals, thereby disengaging said first conductive member from one of said terminals.

4,285,794

ANNULAR ELECTRODES FOR SHUNT CURRENT ELIMINATION

Richard J. Bellows; Patrick G. Grimes, both of Westfield, and Chester W. Elspass, Plainfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 19, 1980, Ser. No. 122,706
Int. Cl.³ C25B *9/04*; C25C *7/00*; C25B *11/00, 11/12*
U.S. Cl. 204—260 **17 Claims**



1. A protective annular electrode for providing a substantially uniform current density along a common manifold of an electrochemical device for reducing or otherwise eliminating undesirable shunt currents in said electrochemical device, comprising:

an annular sleeve;

means for passing current through said sleeve;

a first means for passing a fluid material through said sleeve;

a second means for passing a fluid material through said sleeve; and

an inner liner disposed within said sleeve for selectively passing a material to the exclusion of other materials.

4,285,795

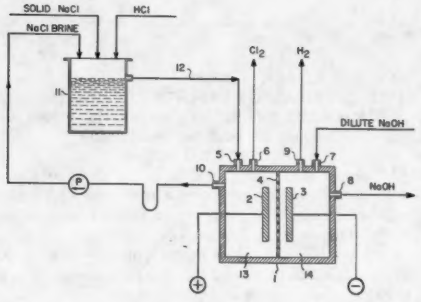
ELECTROLYSIS APPARATUS

Edward H. Cook, Jr., Lewiston, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 387,098, Aug. 9, 1973, which is a continuation-in-part of Ser. No. 212,171, Dec. 27, 1971. This application Apr. 18, 1975, Ser. No. 569,521

Int. Cl.³ C25B *9/00, 13/08*

U.S. Cl. 204—266 **4 Claims**



1. An electrolysis cell comprising a housing, an anode, a cathode, a diaphragm member consisting essentially of a cationactive permselective membrane substantially impervious to liquids and gases, said diaphragm member consisting essentially of a sulfostyrenated perfluoroethylene propylene polymer, said diaphragm member separating said anode and said cathode thereby forming an anode compartment and a cathode compartment, said anode compartment having outlet means for the removal of gaseous products formed at the anode, inlet means for introducing an acidified, saturated alkali metal chloride brine into said anode compartment, a second outlet means for removing depleted brine from said anode compartment and brine replenishing means in communication with both said inlet means and said second outlet means, such that depleted brine is removed from the anode compartment through said second outlet means, passed through said replenishing means wherein it is resaturated and acidified and reintroduced into the anode compartment through said inlet means, and said cathode compartment containing a liquid inlet, a liquid outlet and an outlet for the gaseous products formed at the cathode.

4,285,796

ELECTROLYSIS ELECTRODE

Glenn E. Stoner, and George L. Cahen, Jr., both of Charlottesville, Va., assignors to The University of Virginia, Charlottesville, Va. and Research Corporation, New York, N.Y.

Filed Aug. 21, 1978, Ser. No. 935,155

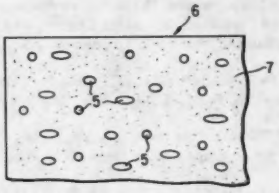
Int. Cl.³ C25B *11/02, 11/04*

U.S. Cl. 204—290 R **4 Claims**

1. An electrode, which comprises:

an electrically conductive current collector; and

a working surface containing a multiplicity of conductive islands in a non-conducting matrix wherein the majority of said islands are in electrically conductive contact with said current collector wherein the average size of said conductive islands ranging from 3–30 μm and the average spacing between said conductive islands ranging from 3–50 μm are of the same order of magnitude as the diffusion layer of the solution intended to be treated when said electrode is immersed into said solution, said surface having fixed thereto on the non-conducting matrix thereof, an enzyme, thereby rendering said electrode capable of simultaneously effecting enzymatic and electrolytic reactions.



4,285,797

CATHODE FOR THE ELECTROLYTIC TREATMENT OF ALKALI HALIDE

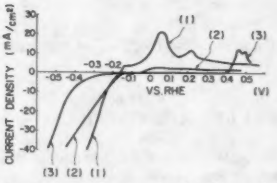
Masakatsu Wagu; Makoto Fukuda, and Shirou Suzuki, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,783

Claims priority, application Japan, May 24, 1978, 53/61044

Int. Cl.³ C25B *11/08*

U.S. Cl. 204—290 R **1 Claim**



1. A cathode electrode for use in the electrolysis of alkali halide, said cathode electrode comprising a mass of one of copper and copper alloy subjected to mechanical grinding by blasting with solid particles of 0.1–1,000 microns in their particle sizes so as to achieve a mechanically ground surface, the latter being coated with one of rhodium and rhodium alloy coated layer.

4,285,798

METHOD OF PRODUCING AN ELECTRODE

Mitsuo Yoshida; Akira Nakamura; Keiichi Ohmure, and Atsuo Ono, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 23, 1979, Ser. No. 96,888

Claims priority, application Japan, Nov. 24, 1978, 53-144235

Int. Cl.³ C25B *11/10;* **B05D** *5/12*

U.S. Cl. 204—290 F **11 Claims**

1. A method of producing an electrode which comprises applying to the surface of a corrosion-resistant electroconductive core material a solution of at least one metal salt capable of forming an electroconductive substance by heat treatment, and subjecting the resulting coated core material to a heat treatment in a heating zone, said heat treatment comprising continuously elevating the temperature of said resulting coated core material to about 400° to 700° C. over a period of time of about 5 minutes to 2 hours while blowing air into the heating zone at a rate of at least about 0.8 m^3/hr per 1 m^2 of the projective area of the core material and rapidly removing gaseous products being produced from the surface of said heat treated coated core material.

11. An electrode produced according to the method of claims **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9** or **10**.

4,285,799

ELECTRODES FOR ELECTROLYTIC PROCESSES, ESPECIALLY METAL ELECTROWINNING

Vittorio de Nora, Nassau, The Bahamas; Antonio Nidola, Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

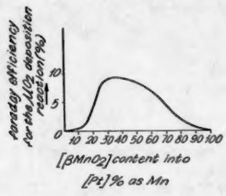
PCT No. PCT/EP79/00020, §371 Date Nov. 28, 1979, §102(e) Date Nov. 26, 1979, PCT Pub. No. WO79/00840, PCT Pub. Date Oct. 18, 1979.

This PCT application filed, Ser. No. 97,345

Claims priority, application United Kingdom, Mar. 28, 1978, 12054/78

Int. Cl.³ C25B *11/08, 11/16, 1/00*

U.S. Cl. 204—290 F **5 Claims**



1. An electrode for electrolytic processes, comprising an electrically-conductive corrosion-resistant substrate having an electrocatalytic coating, characterized in that the coating contains a mixture of at least one platinum group metal and manganese dioxide dispersed in one another throughout the coating in a ratio of from 8:2 to 3:7 by weight of the platinum group metal(s) to the manganese metal of the manganese dioxide.

4,285,800

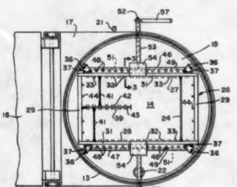
GAS PLASMA REACTOR FOR CIRCUIT BOARDS AND THE LIKE

Joseph M. Welty, Hayward, Calif., assignor to Branson International Plasma Corp., Hayward, Calif.

Filed Apr. 18, 1979, Ser. No. 31,055

Int. Cl.³ C23F *1/00*

U.S. Cl. 204—298 **3 Claims**



1. In a gas plasma reactor for treating printed circuit boards: a housing defining a reaction chamber, gas inlet and outlet means communicating with the chamber, first and second racks connected electrically to ground and having a plurality of spaced apart generally parallel bars for engaging opposing edges of the printed circuit boards to hold the boards in spaced parallel relationship in the region between the racks, a pair of generally planar electrodes oriented in a position generally perpendicular to the surfaces of the circuit boards and positioned outside the region between the racks, each of said electrodes comprising a plurality of spaced apart rods aligned between the bars of the racks and connected electrically together, and means for energizing the electrodes to ionize the gas to form a plasma in the region between the electrodes and the racks.

4,285,801

ELECTROPHORETIC DISPLAY COMPOSITION

Anne A. Chiang, Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1979, Ser. No. 77,416

Int. Cl.³ C25D *13/00;* G02F *1/01*

U.S. Cl. 204—299 R **3 Claims**

1. An electrophoretic display composition comprising particles suspended in a liquid, at least a portion of said particles being at least partially coated with a highly fluorinated polymeric material of highly fluorinated organic compounds having chains longer than C_8, said polymeric material being a dispersant, a charge control agent or a matrix for a charge control agent.

4,285,802

ZINC-NICKEL ALLOY ELECTROPLATING BATH

George B. Rynne, 223 15th St., NE., Atlanta, Ga. 30309

Filed Feb. 20, 1980, Ser. No. 123,109

Int. Cl.³ C25D *3/56*

U.S. Cl. 204—43 Z **10 Claims**

1. An aqueous bath for producing a bright zinc-nickel alloy electroplated deposit having superior corrosion resistance, said bath comprising, on a per liter basis:

(a) a soluble zinc containing compound providing 10–100 grams of zinc as metal and selected from the group consisting of zinc chloride and zinc oxide;

(b) a soluble nickel salt providing 0.01–10 grams of nickel as a metal, said soluble nickel salt being nickel chloride;

(c) an ammoniated electrolyte providing 1–10 grams of ammonium ions, said ammoniated electrolyte being ammonium chloride;

(d) a non-ammoniated electrolyte selected from the group consisting of potassium chloride and sodium chloride, said non-ammoniated electrolytes providing 25–300 grams of chloride ions;

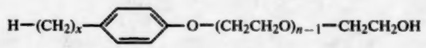
(e) 5–50 grams of a non-ionic polyoxy alkylated surfactant selected from the group consisting of:

nonionic block copolymers of ethylene oxide and linear alcohols having the following structural formula;

$$CH_3-(CH_2)_x-CH_3$$
$$\quad |$$
$$O-(CH_2-CH_2O)_n-H$$

wherein x is an integer from 9 to 15 and n is an integer from 10 to 50;

nonionic block copolymers of ethylene oxide and phenol alcohols having the following structural formula;



wherein x is an integer from 6 to 15 and n is an integer from 10 to 50;

nonionic block copolymers of ethylene oxide and monoethanol amine coconut fatty acid condensate having a total molecular weight of about 475 and an ethylene oxide content of about 46 weight percent thereof;

alkoxylated alkyl phenols, alkoxylated alkyl naphthols, alkoxylated aliphatic monohydric alcohols, alkoxylated polyoxpropylene glycols, alkoxylated 2,4,7,9-tetramethyl-5-decyne-4,7-diol, alkoxylated ethylene diamine, alkoxylated fatty acids, alkoxylated amides, alkoxylated esters; and

(f) 0.05–4 grams of an aromatic aldehyde, said bath having a pH of 3.0–6.9.

4,285,803
CATALYTIC SLURRY PROCESS FOR BLACK OIL CONVERSION

Richard Braun, Hoffman Estates; Russell W. Johnson, Villa Park, and John G. Gatsis, Des Plaines, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jan. 24, 1980, Ser. No. 115,305
Int. Cl.³ C01G 9/16
U.S. Cl. 208—48 AA **14 Claims**

1. In a process for the conversion of an asphaltene-containing hydrocarbonaceous charge stock which comprises the steps of:

(a) forming a reactive slurry of said charge stock, hydrogen and a finely divided catalyst containing at least one metal component from the metals of Groups V-B, VI-B and VIII of the Periodic Table;

(b) reacting said slurry at hydrocarbon conversion conditions including a pressure above about 100 psig and a temperature above about 400° F.; and,

(c) recovering a hydrocarbonaceous product; the improved method of reducing the formation of coke and other undesirable deposits in the process, which comprises effecting said reaction of the slurry in admixture with from about 0.0001% to about 1% by weight, based on the hydrocarbonaceous charge stock, of a solids dispersant comprising an oil-soluble HCl salt of the condensation product, formed at a temperature of from about 20° C. to about 150° C., of equimolar amounts of an epihalohydrin compound and an alkyl amine having from about 12 to about 40 carbon atoms per molecule, from about 1% to about 20% of the amino nitrogen in said condensation product being neutralized with HCl.

4,285,804
PROCESS FOR HYDROTREATING HEAVY HYDROCARBONS IN LIQUID PHASE IN THE PRESENCE OF A DISPERSED CATALYST

Yves Jacquin, Sevres; Michel Davidson, Levesinet, and Jean-Francois Le Page, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 19, 1980, Ser. No. 150,825
Claims priority, application France, May 18, 1979, 79 12.933
Int. Cl.³ C10G 45/06
U.S. Cl. 208—48 R **13 Claims**

1. A process for hydrotreating an asphaltene-containing hydrocarbon oil charge stock, comprising the steps of:

(a) admixing said hydrocarbon oil charge stock with hydrogen and fresh catalyst, said catalyst comprising at least one metal compound whose metal component is selected from groups Vb, VIb, VIIb and the iron group of group VIII, the amount of said metal compound, expressed as metal, relative to said hydrocarbon oil charge stock being from 20 to 500 ppm by weight;

(b) passing the resultant mixture from step (a) through a heating zone comprising a heated surface, said mixture being maintained in said heating zone at a temperature of from 350° to 470° C. for from 15 to 180 seconds;

(c) introducing the heated mixture from step (b) into a hydrotreating reaction zone, introducing a recycle catalyst suspension as hereinafter defined into said reaction zone, and maintaining the resultant hydrotreatment reaction mixture in said reaction zone at a temperature of from 350° to 470° C. and a pressure of from 50 to 200 bars for from 0.1 to 4 hours, the introduction of said recycle catalyst suspension providing said hydrotreatment reaction mixture with from 1,000 to 20,000 ppm by weight of said metal catalyst component, expressed as metal, relative to the weight of said hydrocarbon oil charge stock used in step (a);

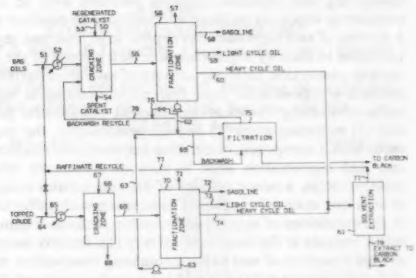
(d) fractionating the hydrotreated reaction mixture from step (c) into at least one gas phase and at least one phase comprising a slurry of said catalyst in hydrotreated hydrocarbon oil;

(e) fractionating said slurry from step (d), and separately recovering a hydrotreated hydrocarbon oil product fraction and a catalyst fraction, at least a portion of the recovered catalyst fraction being suspended in a hydrocarbon oil recycle carrier and the suspension being supplied at a temperature lower than 350° C. to step (c) as said recycle catalyst suspension.

4,285,805
TIME-DELAY PROCESS AND CONTROL SYSTEM FOR ELECTROSTATIC FILTER

Albert F. Stegelman, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 20, 1980, Ser. No. 132,199
Int. Cl.³ C10G 9/16, 9/32
U.S. Cl. 208—113 **13 Claims**



11. A catalytic cracking process comprising;

passing a feed hydrocarbon to a cracking zone wherein it is catalytically converted to hydrocarbons having a lower boiling range than the feed hydrocarbon;

passing a cracking product comprising lower-boiling hydrocarbons and catalyst particles to a fractionation zone and withdrawing a plurality of boiling-range fractions;

withdrawing a slurry oil containing catalyst particles from the lower portion of the fractionation zone;

passing the slurry oil to a filtration zone comprising at least one electrostatic filter having a filter bed of high electrical resistivity, a slurry inlet valve, a product outlet valve, a backflush inlet valve, and a backflush outlet valve; means to apply a voltage gradient across the filter bed and swith means to control the application of the voltage gradient; first actuation means to close the slurry inlet valve and the product outlet valve and open the backflush inlet valve and the backflush outlet valve and to actuate the switch means to interrupt the voltage; second actuation means to close the backflush inlet valve and the backflush outlet valve and open the slurry inlet valve and the product outlet valve and to actuate the switch to reestablish the voltage gradient, the second activation means including delay means to cause the opening of the second valve means to be delayed for a finite time after actuation of the switch;

passing the slurry oil through the electrostatic filter having a voltage gradient applied across the filter bed, thereby removing catalyst particles from the slurry oil;

periodically actuating the first actuation means and passing a backflush fluid through the filter bed with sufficient velocity to remove a substantial portion of the collected catalyst particles;

thereafter actuating the second activation means and resuming the passage of slurry oil through the electrostatic filter; and

withdrawing a filtered product stream from the filtration zone.

4,285,806

CATALYST AND PROCESS FOR CONVERSION OF HYDROCARBONS

John Mooi, Homewood, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 889,689, Mar. 24, 1978, abandoned, which is a division of Ser. No. 699,005, Jun. 21, 1976, Pat. No. 4,253,939.
This application May 8, 1980, Ser. No. 147,900
Int. Cl.[3] B01J *29/12*; C10G *9/16, 11/18, 47/28*
U.S. Cl. 208—120 38 Claims

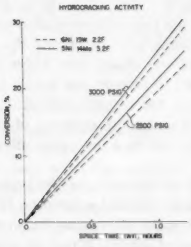
1. In a hydrocarbon conversion process for converting a sulfur-containing hydrocarbon feedstock which comprises (1) contacting said feedstock with solid particles capable of promoting the conversion of said feedstock at hydrocarbon conversion conditions in at least one reaction zone to produce at least one hydrocarbon product and to cause deactivating sulfur-containing carbonaceous deposit to be formed on said solid particles, thereby forming deposit-containing particles; (2) contacting said deposit-containing particles with an oxygen-containing vaporous medium at conditions to combust at least a portion of said carbonaceous deposit in at least one regeneration zone to thereby regenerate at least a portion of the hydrocarbon conversion catalytic activity of said solid particles and to form a regeneration zone flue gas containing at least one sulfur-containing carbonaceous deposit combustion product; and (3) repeating steps (1) and (2) periodically, the improvement which comprises, circulating between said reaction zone and said regeneration zone in intimate admixture with said solid particles, a minor amount of discrete entities comprising at least one material capable of associating with sulfur trioxide at the conditions of step (2) and capable of disassociating with sulfur trioxide at the conditions of step (1), thereby associating at least a portion of said sulfur-containing combustion product with said discrete entities in said regeneration zone and disassociating at least a portion of said sulfur-containing combustion product from said discrete entities in said reaction zone to form H_2S which exits said reaction zone with said hydrocarbon product, provided that said discrete entities prior to introduction into said reaction zone-regeneration zone system are more attrition resistant than said solid particles.

4,285,807

LUBRICATING OIL HYDROTREATING PROCESS

John J. Stanulonis, Pittsburgh; Joseph A. Tabaczek, New Kensington, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 4, 1979, Ser. No. 72,232
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.[3] C10G *45/04, 45/60, 17/00*; B01J *37/00*
U.S. Cl. 208—216 R 13 Claims



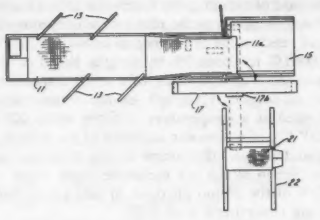
1. A process for hydrotreating a lubricating oil feedstock, which comprises contacting said feedstock and hydrogen under hydrotreating conditions with a catalyst formed by a process which consists essentially of contacting a refractory oxide support comprising between about 10 and about 75 weight percent silica with an impregnating solution consisting essentially of an aqueous, alkaline solution said solution consisting essentially of NH_4^+, Ni^{++}, Mo^{+VI} and F^- in amounts sufficient to produce a supported catalyst composite containing between about 2 and about 8 weight percent nickel, between about 8 and about 25 weight percent molybdenum and between about 1 and about 5 weight percent fluorine based upon the total catalyst composite, using the one-step, incipient wetness technique, said Ni^{++} and F^- being supplied from nickel fluoride, and thereafter heating said impregnated support to a temperature sufficient to drive off ammonia and deposit nickel, fluorine and molybdenum on said support.

4,285,808

TRUCK MIXER WASHOUT RECLAIM SYSTEM

Robert J. Horton, Wauwatosa, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 13, 1980, Ser. No. 206,600
Int. Cl.[3] B03B *5/64, 7/00*; B03D *3/00*
U.S. Cl. 209—17 6 Claims



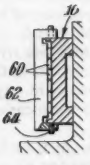
4. In a system for reclaiming the unused mixed concrete ingredients and the washout water by which such ingredients have been removed from their containers and for receiving the same for their storage and reuse, said system including a settling tank, inclined means for the removal of the settled material from the tank and having an elevated discharge end, a graded area directly below said discharge end, an aggregate and sand receiver spaced from said graded area, an inclined belt conveyor having a lower loading end, an upper discharge end and a support frame, and a base for said belt conveyor having bearing means for the limited pivotal movement of the conveyor about a vertical axis and between operative and inoperative positions whereby in said operative position the discharge end of the conveyor is above said receiver and the lower end is above said graded area and below said discharge end and in said inoperative position the lower end of the conveyor is alongside said graded area.

4,285,809

ROTOR FOR SEDIMENTATION FIELD FLOW FRACTIONATION

Charles H. Dilks, Jr., Newark; Joseph J. Kirkland, Wilmington, and Wallace W. Yau, Newark, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 29, 1980, Ser. No. 125,853
Int. Cl.[3] B03B *5/00*
U.S. Cl. 209—155 6 Claims



1. An apparatus for separating particulates suspended in a

fluid medium according to their effective masses, said apparatus having an annular cylindrical channel with a cylinder axis, said channel being sufficiently thin in the radial dimension to effect laminar flow therein, means for rotating said channel about said axis, means for passing said fluid medium circumferentially through said channel, and means for introducing said particulates into said medium for passage through said channel, the improvement wherein

said channel is generally rectangular in crosssection and has a width to thickness aspect ratio lying in the range 3–50 to 1.

4,285,810

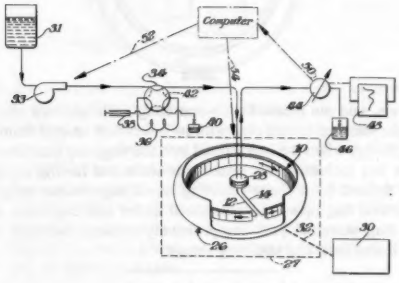
METHOD AND APPARATUS FOR FIELD FLOW FRACTIONATION

Joseph J. Kirkland, Wilmington, and Wallace W. Yau, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 125,851, Feb. 29, 1980, abandoned. This application Mar. 26, 1980, Ser. No. 134,288

Int. Cl.³ B03B *5/00*

U.S. Cl. 209—155 **17 Claims**



9. In an apparatus for separating particulates, including macromolecules and particles, suspended in a fluid medium, said apparatus having a narrow flow channel, means for establishing a force field across said channel that influences a characteristic of said particulates, means for passing said fluid medium through said flow channel, means for introducing a sample of said particulate into said fluid medium for passage through said flow channel, the improvement wherein said field-establishing means includes programming means for decreasing the field strength exponentially as a function of time to reduce the separation time and better equalize particle size separation.

4,285,811

PURIFICATION OF FORMALDEHYDE BY SEPARATION

Tetsuya Miyake, Tokyo; Kunihiko Takeda, Yokohama; Naoki Miyata, Kawasaki; Tatsushi Saeki, Yokohama, and Maomi Seko, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

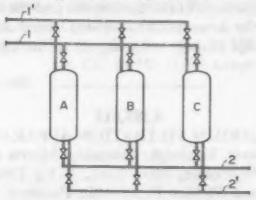
Division of Ser. No. 760,218, Jan. 17, 1977, Pat. No. 4,137,054. This application Jan. 29, 1979, Ser. No. 7,527

Claims priority, application Japan, Jan. 22, 1976, 51/5447

Int. Cl.³ B01D *15/00*

U.S. Cl. 568—422 **17 Claims**

1. A process for purification of formaldehyde by separation, which comprises contacting with adsorbents selected from the group consisting of type A synthetic zeolites wherein the exchangeable cations contain at least one of the Group IA, from the fourth to the sixth period, and Group IIA, the sixth period, of the Periodic Table of Elements a solution containing water, formaldehyde and a stabilizer against polymerization of formaldehyde thereby selectively to adsorb water on said



adsorber and to leave a stream enriched in formaldehyde and containing the stabilizer.

4,285,812

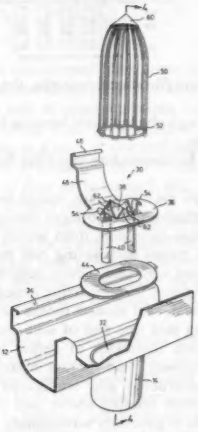
STORM DRAINAGE SYSTEMS

Richard J. Stoltz, 8 Lancefield Crescent, Bramalea, Ontario, Canada (L6S 2R2)

Division of Ser. No. 964,247, Nov. 27, 1978, Pat. No. 4,216,760. This application Mar. 28, 1980, Ser. No. 134,910

Int. Cl.³ E02B *9/04*

U.S. Cl. 210—162 **10 Claims**



1. A device for restricting the rate at which water drains from an eavestrough into a downspout, the downspout having an input opening communicating with the eavestrough, said device comprising;

(a) a cover proportioned to fit within said eavestrough and to extend in an outwardly overlying relationship with respect to the input opening to substantially cover the input opening to prevent full flow discharge of water from the eavestrough through the input opening into the downspout,

(b) a drainage passage opening through said cover to permit water to pass therethrough, said drainage passage having a cross-sectional area which is substantially less than that of the input passage of the downspout in association with which it is to be used such that flow through the drainage passage is restricted to a flow which is substantially less than the full flow capacity of the input opening thereby to effect a substantial reduction in the rate of run-off from the eavestrough to its associated downspout in use,

(c) mounting means for mounting the cover in an operable position within an eavestrough, said mounting means comprising leg means depending from and arm means projecting upwardly from the cover, the leg means being proportioned to fit within the input passage of the down-

spout and the arm means being adapted to interlock with the eavestrough to prevent withdrawal of the legs from the input passage of the downspout and the legs cooperating with the downspout to prevent lateral displacement of the drainage passage with respect to the input passage of the downspout.

4,285,813

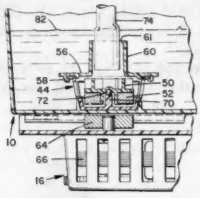
AQUARIUM FILTRATION APPARATUS

James B. Stewart, Randolph, Township, Morris County, N.J.; Klaus W. Woltmann, New York, N.Y.; Edwin E. Faris, Wyckhoff, and Sheldon P. Schmidt, Paramus, both of N.J., assignors to Metaframe Corporation, Elmwood Park, N.J.

Continuation of Ser. No. 890,365, Mar. 27, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 53,112

Int. Cl.[3] **E04H** *3/20*

U.S. Cl. 210—169 **13 Claims**



1. In an aquarium filtration apparatus, the combination comprising:

a generally trough-shaped filter housing having an open top and a bottom;

bracket means for suspending said filter housing on an aquarium edge;

an impeller type suction means within said housing fixedly positioned relative to the bottom thereof;

intake tube means extending from within said housing over said bracket means and having one end thereof in fluid communication with said suction means and the other end thereof configured for immersing beneath the water level of the aquarium, said suction means having an inlet aperture engaging said one end of said intake tube means in spaced relation therewith to define an annular shaped bypass passageway, said suction means and passageway being so constructed and configured that with water within said filter housing above said inlet aperture, said suction means is generally self-priming by drawing water from within said filter housing through said passagewy thereby generating sufficient intake suction to draw water and any trapped air from said intake tube means into said filter housing and that in normal operation said suction means is generally free of cavitation effects, said impeller means generating sufficient suction for drawing said one end of said intake tube into abutment with said impeller means after said self-priming is effected for providing a fluid seal between said filter housing and said impeller inlet opening; and

means on said housing for generally fixedly position said intake tube means relative to said housing.

4,285,814

FILTER BAG CLAMP ASSEMBLY

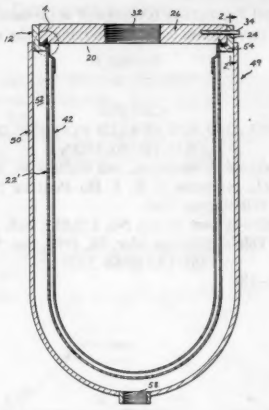
Howard W. Morgan, Jr., Michigan City, Ind., assignor to Filter Specialists, Inc., Michigan City, Ind.

Filed Dec. 31, 1979, Ser. No. 108,587

Int. Cl.[3] **B01D** *29/26*

U.S. Cl. 210—315 **4 Claims**

1. A bag clamp assembly for use in a liquid filter, said assembly comprising a ring, said ring being defined by an outer wall and an inner wall, said inner wall including a lower annular flange extending radially inwardly from the inner wall, a cap fittable within said ring, said cap having a substantially solid body and including a lateral circumferential edge, said cap body including inner and outer faces and having a bore therethrough extending from said inner face to said outer face, said bore constituting a liquid inlet, one of said ring outer wall and said cap lateral edge carrying a plurality of pin means extending radially therefrom, the other of said ring outer wall and said cap lateral edge having a plurality of lock slots formed



therein, said pin means for co-operating with said lock slots to secure said cap to said ring with its lower face spaced from the ring flange when the cap is fitted into the ring, and a removable filter bag including reticulated side walls and having an open end defined by a shape-retaining liquid impervious marginal part, said bag open end positioned under said cap bore with said bag marginal part compressively retained between said cap lower face and said ring flange.

4,285,815

VACUUM FILTER BELT APPARATUS

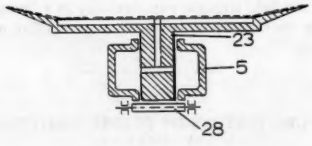
Emilio Gallottini, Lodi Milano, Italy, assignor to Esmil B.V., Amsterdam, Netherlands

Filed Oct. 12, 1979, Ser. No. 84,142

Claims priority, application Netherlands, Oct. 20, 1978, 7810506

Int. Cl.[3] **B01D** *33/04*

U.S. Cl. 210—400 **9 Claims**



1. In a vacuum filter belt apparatus comprising a continuous belt movable by driving means along a continuous path which includes an operative path portion at which the upper face of the belt is concave, the belt having a relatively thick central portion which is sealed to at least one vacuum chamber located below the belt at said operative path portion and having a slot in its upper side, there being passages extending from the upper surface of the belt through the relatively thick central portion of the belt to within the vacuum chamber to communicate the upper surface of the belt with the vacuum chamber, whereby suction filtering of material on the belt is effected, the improvement that the vacuum chamber has a slot in its lower side beneath said slot in its upper side and that the said thick central

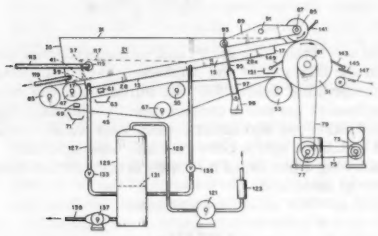
portion of the belt extends through both said slots to beneath the vacuum chamber, there being seals provided at both said slots to seal the vacuum chamber and there being support means for the said thick central portion beneath the vacuum chamber.

4,285,816

DEWATERING SYSTEM

Charles A. Lee, Knoxville, Tenn., assignor to Fairchild, Incorporated, Beckley, W. Va.

Filed Mar. 4, 1980, Ser. No. 127,186
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—401 **9 Claims**



8. A system for separating solids from a slurry containing liquids and solids comprising in combination:

an elongated plate having spaced apart openings therethrough, said plate being disposed at an angle to the horizontal with one end higher than the other,

a first endless screen, said first screen being woven with a coarse mesh from filaments of relatively large diameter with a satin weave to provide elongated knuckles on one side of the screen which are oriented in the machine direction of said first screen,

one run of said first screen being trained over and supported for sliding movement on the upper surface of said plate from its lower end to its upper end, the elongated knuckles oriented in the machine direction being in contact with said plate,

a second endless screen, said screen being woven with a fine mesh from filaments of relatively small diameter with a satin weave to provide elongated knuckles on one side of the screen which are oriented in the machine direction of said second screen,

one run of said second screen being supported upon the run of said first screen which is supported on said plate, the side of said second screen which includes the elongated machine direction knuckles being out of contact with first screen,

means for forming a pond of the slurry over a portion of the run of said second screen at its lower end, means for moving said screens as a unit over said plate from its lower end toward its upper end including a first roll over which said screens are trained, said first roll being disposed at the upper end of said plate,

a second roll engaging said screens on said first roll to form a nip, said nip being positioned upstream relative to the direction of movement of said screens from the highest point on said first roll,

means for biasing said first and second rolls together to apply pressure at said nip,

a vacuum chamber on the side of said plate opposite the side supporting said first screen, said vacuum chamber extending over the openings in said plate,

means for drawing a vacuum on said vacuum chamber, and

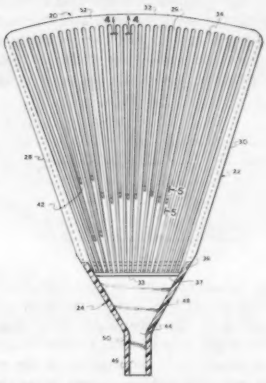
means for removing solids from the surface of said second roll and from said second screen.

4,285,817

DISC SECTOR

Kenneth E. Barthelemy, West Warwick, R.I., assignor to Albany International Corp., Menands, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,550
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—486 **11 Claims**



1. A sector for a disc-shaped filter comprising:

a substantially sector-shaped element having a pair of opposed sides, a pair of opposing edges including a leading edge and a trailing edge converging toward each other and terminating in a neck at one end and diverging in the other direction to terminate in an arcuate outer edge;

an arrangement of flow paths on each side and positioned to direct filtrate toward the neck;

the element adapted to be interconnected with a plurality of similar sections to form a disc-shaped filter and adapted to be interconnected with pressure differential means so that when a filter medium is mounted thereon, filtrate collected therethrough will be directed to the neck for removal; and

the flow paths being a predetermined non-symmetrical arrangement of channels in the outer surface of each side with the channel arrangement adjacent the leading edge being different from the channel arrangement adjacent the trailing edge including a greater number of channels ending adjacent the arcuate outer edge between the center line of the element and the trailing edge than between the center line of the element and the leading edge and the channels being of predetermined size to facilitate accommodation of different amounts of filtrate on different portions of the element and maintain a predetermined pressure differential condition as the element passes through the material to be filtered and to provide streamlined and low turbulence flow through the channels with controlled direction and without significant back-flow between channels.

4,285,818

PROCESS OF TREATING WASTEWATER WITH OXYGEN

Josef Muskat, Aarbergen, Fed. Rep. of Germany, assignor to Passavant-Werke Michelbacher Huette, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,062
Int. Cl.³ C02F *3/26*
U.S. Cl. 210—614 **15 Claims**

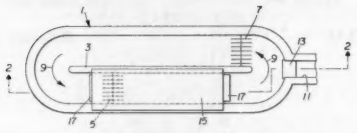
1. In a process for treating wastewater with oxygen, wherein oxygen of a higher concentration than atmospheric oxygen is contacted at least intermittently with the water surface and introduced into the wastewater through an agitation of said

water surface, the improvement comprising the treatment of at least part of the total volume of a circulating horizontal course of the wastewater by carrying out alternately at least two of the following three modes of operation:

(a) surface aerating the wastewater using atmospheric air,

(b) oxygenating the wastewater in at least one section of said course under a gas-filled compartment defined by a cover over said one section while maintaining atmospheric pressure above the wastewater under said compartment, and

(c) oxygenating the wastewater in said one section of said course under said compartment while maintaining positive pressure above the wastewater under said compartment, with the operating modes alternating with each other in



response to variations in the oxygen content of the wastewater and/or the oxygen concentration in said gas-filled compartment with the wastewater beng exposed to the introduction of gas only in said one section of said course and being exposed to the atmosphere on the remainder of said course and with said one section being the only part of said course covered by a cover and the wastewater is retained in said course for a period sufficiently long to allow the volume of said wastewater to pass beneath said cover several times, and wherein in any of the operating modes carried out the introduction of oxygen and air into the water is controlled by control means to maintain the oxygen content of the wastewater within a range defined by a preselected upper limit and a preselected lower limit.

4,285,819

FUNCTIONAL MAGNETIC MICROSPHERES

Shiao-Ping S. Yen; Alan Rembaum, and Robert F. Landel, all of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 28, 1980, Ser. No. 116,093
Int. Cl.³ B01D *53/16*
U.S. Cl. 210—679 **15 Claims**

1. A composition comprising functional magnetic microsphere particles having a diameter from 100 angstroms to 1000 microns consisting essentially of:

magnetic granules having a diameter less than 50 angstroms containing a coating of a water insoluble chitosan, said particles containing at least 0.1% by weight of metal.

4,285,820

PROCESS FOR THE TREATMENT OF A WASTE LIQUID CONTAINING BORON COMPOUNDS AND ORGANIC COMPOUNDS

Mikio Akune, Yokosuka, Japan, assignor to Nittetu Chemical Engineering Ltd., Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,558
Claims priority, application Japan, Dec. 22, 1978, 53-157607
Int. Cl.³ C02F *1/02*; C01B *35/06*
U.S. Cl. 210—774 **6 Claims**

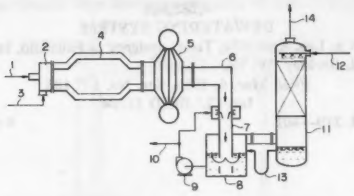
1. A process for the treating of a waste liquid containing boron compounds and organic compounds, comprising:

combusting the waste liquid in a combustion zone at a temperature exceeding 1000° C. but not exceeding 1500° C. in the presence of steam to produce a combustion gas, said steam being present in an amount providing a molar ratio of steam to boron components calculated as boron oxide of at least 30:1, to thereby shift to the right the following reaction:

$$\frac{1}{2}B_2O_3+\frac{1}{2}H_2O \rightleftarrows HBO_2$$

in said combustion zone, and so that substantially all boron components contained in said combustion gas are present as gaseous metaboric acid;

introducing said combustion gas into a heat recovery zone to



cool said combustion gas by indirect heat exchange with a heatable fluid so that said combustion gas is not cooled to a temperature below 400° C.; introducing said cooled combustion gas into a contact zone to bring said cooled combustion gas into direct contact with water, whereby the metaboric acid is converted into boric acid; and

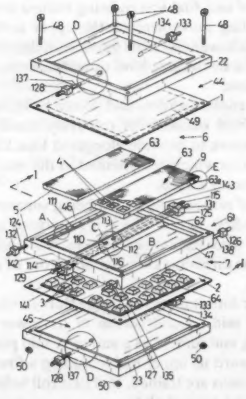
withdrawing a portion of the liquid in said contact zone to recover boric acid.

4,285,821

FILTERING METHOD

Edwin Hiesinger, Jenback; Klaus Keplinger, and Hermann Nessler, both of Innsbruck, all of Austria, assignors to Inkomag, Basel, Switzerland

Division of Ser. No. 907,628, May 19, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,747
Claims priority, application Austria, May 20, 1977, 3609/77
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—777 **3 Claims**



1. A method of filtering which comprises:

(a) partitioning a filter chamber with a fluid-permeable planar support fabric into a single upstream compartment and a single downstream compartment, said planar support fabric forming a horizontal partition;

(b) entraining onto said support fabric in said upstream compartment a particulate filter-aid layer by suspending particles of a filter-aid material in a carrier medium, introducing said carrier medium into said upstream compartment, and passing said carrier medium through said fabric whereby said particles form said layer;

(c) discharging the carrier medium of step (b) from said chamber downstream of said support fabric, and removing

any residues of the carrier medium completely from said chamber by a displacement fluid so that removal of carrier medium from said upstream compartment is completed prior to complete removal of carrier medium from said downstream compartment;

(d) introducing a filterable medium into said upstream compartment, and passing said filterable medium through said layer and said support fabric from said upstream compartment to said downstream compartment, thereby depositing impurities contained in said filterable medium on said layer and enabling pure filtrate to enter said downstream compartment;

(e) discharging the filterable medium of step (d) from said upstream compartment and discharging the pure filtrate downstream from said downstream compartment, and then drawing any residues of said filterable medium completely from said chamber by introducing said displacement fluid so that removal of such residues from said upstream compartment is completed prior to complete removal of the residues from the downstream compartment;

(f) thereafter introducing a washing medium into said chamber and to the downstream side of said fabric and thereby backwashing said layer from said fabric and entraining material of said layer backwashed from said fabric out of said upstream compartment with the washing medium;

(g) discharging the washing medium used in step (f) from said chamber and removing any residues of said washing medium completely from said chamber by said displacement fluid; and

(h) thereafter repeating steps (b) through (g).

4,285,822

PROCESS FOR PREPARING A SULFURIZED MOLYBDENUM-CONTAINING COMPOSITION AND LUBRICATING OIL CONTAINING THE COMPOSITION

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 52,697

The portion of the term of this patent subsequent to May 5, 1998, has been disclaimed.

Int. Cl.³ C10M *1/32, 1/38, 1/44, 1/54*

U.S. Cl. 252—46.4 **16 Claims**

1. A process for preparing a sulfurized molybdenum-containing composition which comprises (1) reacting an acidic molybdenum compound and a basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, hydrocarbyl monoamine, hydrocarbyl polyamine, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, dispersant viscosity index improver, or mixtures thereof, in the presence of a polar promoter, to form a molybdenum complex wherein from 0.01 to 2.00 atoms of molybdenum are present per basic nitrogen atom, and the promoter is present in the ratio of 0.01 to 50 mols of water per mol of molybdenum; and (2) reacting said complex with carbon disulfide, in an amount to provide 0.1 to 4.0 atoms of sulfur per atom of molybdenum, to form a sulfur- and molybdenum-containing composition.

4,285,823

DIESEL LUBRICANT CONTAINING 5-AMINO TETRAZOLES

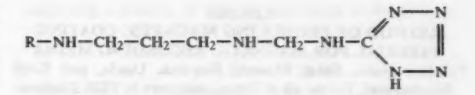
Rodney L. Sung, Fishkill, and Benjamin H. Zoleski, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,701

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—50 **3 Claims**

1. A diesel lubricant composition comprising a diesel lubricating oil and a silver corrosion-inhibiting amount of at least one compound of the formula:



wherein R is a straight chain alkyl having from 12 to 18 carbon atoms in the chain.

4,285,824

HYDROXYALKYL HYDROXY-AROMATIC CONDENSATION PRODUCTS AS FUEL AND LUBRICANT ADDITIVES

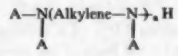
Charles P. Bryant, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 5,623, Jan. 22, 1979, Pat. No. 4,205,960, which is a division of Ser. No. 901,173, Apr. 28, 1978, Pat. No. 4,163,730, which is a division of Ser. No. 678,101, Apr. 19, 1976, Pat. No. 4,108,784, which is a continuation-in-part of Ser. No. 459,750, Apr. 9, 1974, abandoned. This application Feb. 22, 1980, Ser. No. 123,613

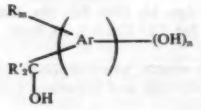
Int. Cl.³ C10M *1/24*

U.S. Cl. 252—56 D **46 Claims**

1. A post-treated product made by a process which comprises reacting a mono- or polyhydric alcohol, an epoxide, a C_{1-30} monoamine, or a polyamine of the formula



wherein each A is independently a hydrogen atom, a hydrocarbyl group of up to 30 carbon atoms or a hydroxy-substituted hydrocarbyl group of up to about ten carbon atoms containing one or two hydroxy groups, "Alkylene" is a divalent alkylene group of about one to ten carbon atoms and a is an average of integers between one and ten, and mixtures thereof, with a condensation product made by the process comprising reacting (A) at least one alpha hydroxy aromatic compound of the general formula



wherein Ar is a hydrocarbyl aromatic nucleus of 6 to about 30 carbon atoms, or an analog of such an aromatic nucleus substituted with 1 to 3 lower alkoxy, lower alkylthio, chloro, or nitro substituents, each R is a nonfused hydrocarbyl group of about 25 to about 700 carbon atoms, each R′ is independently a hydrogen atom, an alkyl group of 1 to 36 carbon atoms, or a halogen-substituted alkyl group of 1 to about 36 carbon atoms, n is 1 to 3 and m is 1 to 5 with the provisos that (i) the total number of carbon atoms in the R′ groups does not exceed 36 and (ii) where m exceeds 1, one of the R groups can also be a

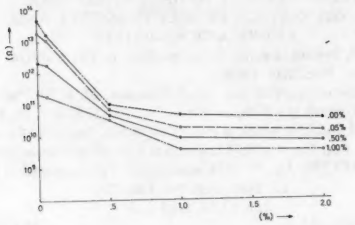
group, with (B) at least one hydrocarbyl, alpha-beta olefinically unsaturated compound selected from the group consisting of C_{2-40} nitriles, C_{2-40} carboxylic acids and anhydrides, esters, amides and ammonium and metal salts of said C_{2-40} carboxylic acids, the reaction of (A) with (B) resulting in the formation of carbon-to-carbon bond, said bond including the carbon of at least one R'_2C- group.

4,285,825

METHOD OF PRODUCING MAGNETIC COATING MATERIAL FOR MAGNETIC RECORDING MEDIA

Yukihiro Isobe, Saku; Masashi Hayama, Usada, and Kenji Hirabayashi, Tokyo, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1979, Ser. No. 83,913
Claims priority, application Japan, Oct. 12, 1978, 53/124690
Int. Cl.³ H01F 1/00, 1/26; C04B 35/04
U.S. Cl. 252—62.54 3 Claims



1. A method of producing a magnetic coating material for magnetic recording media, which comprises the steps of charging a mixture of a magnetic powder and a binder composition containing from about 0.1 to about 2.0% of an abrasive and from about 0.05 to about 1.0% of a betaine type ampholytic antistatic agent, both on the basis of the amount of a magnetic powder, together with steel balls and dispersing said mixture; said abrasive having a hardness of not lower than 6 on Mohs' scale.

4,285,826

TOILET SOAP BARS IMPARTING IMPROVED MOISTURING AND SKIN FEEL CHARACTERISTICS

Richard J. Bertozzi; Joseph M. Pavelek, Jr., and Daniel S. Wood, all of Phoenix, Ariz., assignors to Armour-Dial, Inc., Phoenix, Ariz.

Filed Apr. 14, 1980, Ser. No. 140,502
Int. Cl.³ C11D 9/26, 9/46
U.S. Cl. 252—117 11 Claims

1. A toilet soap which, when applied to the skin, reduces transpirational water loss and imparts a good skin feel, said soap comprising

(a) from about 60% to 95% by weight of an anhydrous soap base composition consisting essentially of salts of fatty acids having from 12 to 18 carbon atoms, said salts being selected from the group consisting of alkali metal, ammonium or alkanolamine;

(b) from about 5% to 25% moisture;

(c) from about 0.02% to 5% of a polyoxyethylene polymer of the formula $H(OCH_2CH_2)_nOH$ where n has an average value from 2000 to 90,000; and

(d) from about 0.1% to 15% of a polymeric material selected from the group consisting of

(1) polypropoxylated materials of the formula

$$R-(O-\underset{\underset{CH_3}{|}}{CH}-CH_2)_nOH$$

where

n has an average value of from 9 to 50, and

R is a hydrocarbon radical having from 3 to 6 carbon atoms,

(2) polypropoxylated materials of the formula

$$R-\left(\begin{matrix}C\\ \|\\ O\end{matrix}\right)_y-(OCH-\underset{\underset{CH_3}{|}}{CH}-CH_2)_nOH$$

where

n has an average value of from 9 to 50,

R is a hydrocarbon radical having from 7 to 35 carbon atoms, and

y is 0 or 1,

(3) polyethoxylated materials of the formula

$$R-\left(\begin{matrix}C\\ \|\\ O\end{matrix}\right)_y-(O-CH_2CH_2)_nOH$$

where

n has an average value from of 9 to 50,

R is a hydrocarbon radical having from 3 to 35 carbon atoms, and

y is 0 or 1, and

(4) mixtures thereof,

4,285,827

EMULSIFIED FILM FORMING POLYMER AND METHYLENE CHLORIDE/WATER PAINT STRIPPER

Sidney G. Wyatt, Mitcham, England, assignor to R.J. Hamer Limited, Mitcham, England

Filed Aug. 16, 1979, Ser. No. 67,170
Claims priority, application United Kingdom, Aug. 24, 1978, 34545/78
Int. Cl.³ C11D 7/50, 7/44, 7/30
U.S. Cl. 252—165 6 Claims

1. A paint stripper comprising an aqueous emulsion of methylene chloride, a film forming polymer selected from the group consisting of acrylic polymers, vinyl acrylic polymers, vinyl acetate polymers, and vinyl acetate copolymers, a cellulose gum soluble in the methylene chloride and a water soluble cellulose gum.

4,285,828

PRODUCTION OF A POROUS ALUMINUM MATRIX FOR THE NEGATIVE ELECTRODE OF A GALVANIC LITHIUM ALUMINUM METAL SULFIDE ELEMENT

Reinhard Knödler, Kriftel, and Gotthold Böhme, Oberursel, both of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 4, 1979, Ser. No. 45,405
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1978, 2829094
Int. Cl.³ H01M 4/66
U.S. Cl. 252—182.1 7 Claims

1. Process for the production of a porous aluminum matrix for the negative electrode of a galvanic cell, in the unchanged state, having aluminum and metal lithium sulfide elements or electrodes, which comprises thoroughly mixing aluminum powder with a salt, which is soluble in water and which serves as an expanding agent, the grain size of the mixture of aluminum powder and fine expanding agent being less than or equal to 50 μm, then adding coarser particles having a particle size of about 100 to 500 μm of the expanding agent to the mixture of aluminum powder and fine salt, hot pressing the resultant mixture at a temperature of 150° to 300° C. and a pressure of at least 500 bar, an aluminum matrix forming, and dissolving the expanding agent out of the resultant aluminum matrix with water, whereby the porous aluminum matrix is formed.

4,285,829

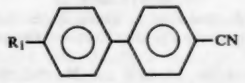
LIQUID-CRYSTALLINE DIELECTRIC

Rudolf Eidenschink, Dieburg; Ludwig Pohl, Darmstadt; Georg Weber, Erzhausen, and Fernando Del Pino, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

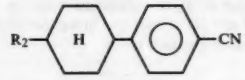
Filed Jul. 20, 1979, Ser. No. 59,346
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832112
Int. Cl.³ C09K 3/34; C02F 1/13
U.S. Cl. 252—299.63 8 Claims

1. A liquid-crystalline dielectric having a positive dielectric

anisotropy comprising at least one biphenyl derivative of the formula

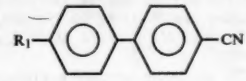


wherein R_1 is alkyl of 1–4 C atoms or alkoxy of 1–3 C atoms, and at least one phenylcyclohexane derivative of the formula

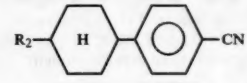


wherein R_2 is alkyl of 1–4 C atoms, in a weight ratio of 3:1 to 1:3, said dielectric containing at least four of said biphenyl and phenylcyclohexane derivatives combined.

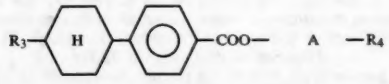
2. A liquid-crystalline dielectric having a positive dielectric anisotropy comprising at least one biphenyl derivative of the formula



wherein R_1 is alkyl of 1–4 C atoms or alkoxy of 1–3 C atoms, and at least one phenylcyclohexane derivative of the formula



wherein R_2 is alkyl of 1–4 C atoms, in a weight ratio of 3:1 to 1:3, and further comprising a cyclohexane derivative of the formula



wherein the ring A is 1,4-disubstituted phenyl or cyclohexane and R_3 and R_4 are each straight-chain alkyl of 1–8 C; or, if ring A is phenyl, R_4 is also alkoxy or alkanoyloxy, of up to 8 C atoms in each case, or CN.

4,285,830

METHOD AND APPARATUS FOR RECONDITIONING WASTE SOLUTIONS OF THE NUCLEAR INDUSTRY WHICH CONTAIN AMMONIUM NITRATE

Burkhardt Müller, Übach-Palenberg, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 30, 1978, Ser. No. 964,906

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753368; Nov. 11, 1978, 2849050

Int. Cl.³ G21F *9/14*

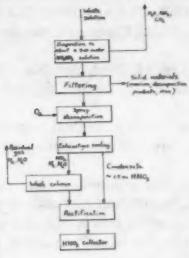
U.S. Cl. 252—301.1 W **12 Claims**

1. A method of treating waste solutions which are produced during the production of fuel and breeder material for nuclear reactors and which contain about 60 weight percent ammonium nitrate which method comprises the steps of:

continuously spraying waste solution containing about 60% ammonium nitrate into an ammonium nitrate decomposition furnace for essential decomposition; and

subjecting the decomposition products formed during said spraying step to condensation to enable separation of said decompositions products into a liquid and a gaseous phase; and

supplying a quantity of oxygen, equivalent to the NO content of the decomposition products, to the ammonium nitrate decomposition zone.



4,285,831

PROCESS FOR PRODUCTION OF ACTIVATED CARBON FIBERS

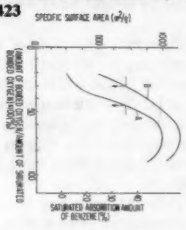
Masatoshi Yoshida, Mishima, and Minoru Hirai, Shizuoka, both of Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 785,888, Apr. 8, 1977. This application Apr. 23, 1979, Ser. No. 32,193

Claims priority, application Japan, Oct. 5, 1976, 51/118989

Int. Cl.³ B01J *37/00*; D01F *9/12*; D02G *3/00*

U.S. Cl. 252—423 **19 Claims**



1. A process for producing activated carbon fibers of high adsorption capacity which contain about 80 to about 90 weight percent carbon, about 3 to about 15 weight percent nitrogen, about 2 to about 10 weight percent oxygen and less than 1 weight percent hydrogen, which comprises oxidizing an acrylonitrile based polymer which is a homopolymer of acrylonitrile, a copolymer containing about 60% by weight or more acrylonitrile, or a mixture of polymers such that about 60% by weight or more of acrylonitrile is present in the mixture, in an oxidizing atmosphere at a temperature of about 200° C. to about 300° C. while applying a tension to the fiber until the amount of bonded oxygen reaches about 65% to about 95% of the saturated amount of bonded oxygen of the fiber, wherein the tension applied is such that the shrinkage of the fiber during oxidation reaches about 70% to about 90% of the degree of free shrinkage at the same temperature, and then activating the fiber, wherein activation is by heating the oxidized fiber in a gas selected from CO_2, NH_3, steam or a mixture thereof at a temperature of about 700° C. to about 1,000° C. for 1 minute to 3 hours while the fiber is allowed to shrink freely, to thereby provide a specific surface area to said carbon fiber of from 300 m^2/g to 2,000 m^2/g, a tensile strength of about 20 to about 80 Kg/mm^2, a tensile elongation of about 0.5 to 3% and a tensile modulus of about 1,500 to about 5,000 Kg/mm^2.

15. An activated carbon fiber containing about 80 to about 90 wt% carbon, about 3 to about 15 wt% nitrogen, about 2 to about 10 wt% oxygen and less than about 1 wt% hydrogen, said activated carbon fiber having a specific surface area of about 300 to about 2,000 m^2/g, a tensile strength of about 20 to about 80 Kg/mm^2, a tensile elongation of about 0.5 to 3% and a tensile modulus of about 1,500 to about 5,000 Kg/mm^2.

4,285,832

METHOD OF RECOVERING RESIDUAL VEGETABLE OIL CONTAINED IN SPENT BLEACHING CLAY AND PROCESSING THE BLEACHING CLAY FOR REUSE

George O. Orth, Jr., 10612 Riviera Pl. Northeast, Seattle, Wash. 98125

Filed Aug. 11, 1980, Ser. No. 176,990
Int. Cl.[3] B01J *20/30, 20/14, 20/28;* C11B *13/04*
U.S. Cl. 252—424 12 Claims

1. A method of recovering residual vegetable oils contained in spent bleaching clay used in refining such vegetable oils, comprising:

mixing the spent clay containing the residual oil with an organic binder, water, and a plastic clay,

forming the composition into a plurality of shaped particulate solids of suitable size for solvent extraction of the vegetable oil therefrom,

extracting the residual oil from the particulate solids with an extraction solvent for the vegetable oil, the shaped particulate solids retaining the spent bleaching clay in the bonded state and preventing the spent bleaching clay particles from being carried into the extraction solvent and oil.

11. A method of recovering residual vegetable oil contained in spent bleaching clay used in the refining of such oil, comprising:

mixing the spent bleaching clay containing the vegetable oil with 0.2–5 percent by weight of an organic binder selected from the group consisting of water-soluble gums and resins, 10–35 percent by weight water, and 5–20 percent of a plastic clay,

forming the composition into a plurality of shaped particulate solids of suitable size for solvent extraction,

removing substantially all of the water therefrom, and

extracting the residual oil from the shaped particulate solids with an extraction solvent, the shaped particulate solids holding the spent bleaching clay therein in the bonded state and preventing the solids from being carried into the oil being extracted.

12. The method of claim 11, including heating the shaped particulate solids remaining after extraction to a temperature sufficient to char the carbon contained therein, resulting in an activated carbon/clay composition.

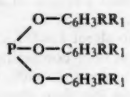
4,285,833

CATALYST, ITS PRODUCTION AND A PROCESS FOR THE POLYMERIZATION OF BUTADIENE

Manfred Beck, Odenthal, and Gottfried Pampus, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,679
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911262
Int. Cl.[3] C08F *4/70*
U.S. Cl. 252—428 5 Claims

1. A catalyst consisting of (a) a cobalt compound, (b) an aluminium organic compound, (c) water and (d) a phosphite, characterised in that the phosphite is a compound corresponding to the formula (1):



(1)

in which

R represents a C_3–C_{20} alkyl radical, and

R_1 represents hydrogen or a C_1–C_6 alkyl radical.

4,285,834

DUAL, INDEPENDENTLY SUPPORTED CATALYST MIXTURES

Kirby Lowery, Jr., and Fred L. Vance, Jr., both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 31, 1979, Ser. No. 108,896
Int. Cl.[3] C08F *4/02, 4/62, 4/64*
U.S. Cl. 252—429 C 9 Claims

1. A catalyst mixture of at least two independently supported catalysts comprising (1) at least one inorganic halide supported Ziegler catalyst containing titanium, vanadium or mixture thereof and (2) at least one inorganic oxide supported-chromium containing catalyst.

4,285,835

CATALYST FOR ALKYLATING AROMATICS WITH OLEFINS

Stephen M. Kovach, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 55,221, Jul. 5, 1979, abandoned, Division of Ser. No. 860,503, Dec. 14, 1977, abandoned. This application Aug. 25, 1980, Ser. No. 180,965
Int. Cl.[3] B01J *21/02, 21/04, 23/14, 23/34*
U.S. Cl. 252—432 5 Claims

1. A catalyst for alkylating aromatic hydrocarbons with an olefinic hydrocarbon comprising:

(a) between about 0.1 and about 4% by weight of metal oxides selected from the group consisting of the oxide of tin or lead, mixture of oxides of tin and lead, and mixture of oxides of tin, lead, and manganese; and

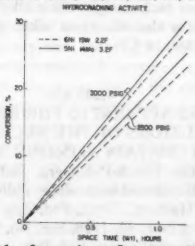
(b) between about 0.5 and about 15% by weight of boria, both impregnated on an alumina support.

4,285,836

IMPREGNATING SOLUTION FOR HYDROTREATING CATALYST MANUFACTURE AND PRODUCTION THEREOF

John J. Stanulonis, Pittsburgh; Joseph A. Tabacek, New Kensington, and Roger F. Vogel, Butler, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 4, 1979, Ser. No. 72,241
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.[3] B01J *37/00, 29/00, 23/64, 27/24*
U.S. Cl. 252—438 14 Claims



1. A process for the formation of an aqueous, alkaline impregnating solution for the one-step impregnation of nickel and molybdenum onto a catalyst support, which process consists essentially of admixing

(A) nickel fluoride, and

(B) an ammoniacal solution of Mo^{+VI}, to form an impregnating solution consisting essentially of NH_4^+, F^-, Ni^{++} and Mo^{+VI} in amounts sufficient to produce a supported catalyst composite containing between about 2 and about 8 weight percent nickel, between about 8 and about 25 weight percent molybdenum and between about 1 and about 5 weight percent fluorine based upon the total catalyst composite when using the one-step, incipient wetness technique.

4,285,837

CATALYST FOR STEAM REFORMING OF HYDROCARBONS

Nobuhiro Sato, Nagoya; Yoshinobu Yamaguchi, Seto; Hitoshi Kodama, Nagoya; Isamu Koshdyama, Nagoya; Nanahiko Kitano, Nagoya, and Shigeharu Tsutsumi, Inazawa, all of Japan, assignors to Fujimi Kenmazai Kogyo Co., Ltd., Nishikasugai and Toyo Engineering Corporation, Tokyo, both of, Japan

Filed Apr. 9, 1980, Ser. No. 138,810

Claims priority, application Japan, Apr. 18, 1979, 54-47471

Int. Cl.[3] B01J *21/04, 23/74*

U.S. Cl. 252—466 J 4 Claims

1. In a catalyst for the steam reforming of hydrocarbons comprising porous aluminum oxide as a porous carrier and a nickel component as an active catalyst component, the improvement which comprises: in said porous carrier (1) the pore volume provided by pores having pore diameters in the range of from 60 to 120 Angstrom units is not less than 0.35 ml/g, and (2) the pore volume provided by pores having pore diameters of more than 120 Angstrom units is not less than 0.1 ml/g, said carrier containing not less than 98% by weight of aluminum oxide and having said nickel component deposited thereon in an amount in the range of from 10 to 30% by weight, calculated as nickel oxide, based on the total weight of the catalyst.

4,285,838

METHOD OF PRODUCING PLATE-SHAPED CATALYST UNIT FOR NOX REDUCTION OF EXHAUST GAS

Nobuyoshi Ishida; Yoshihide Kondo; Kunihiko Konishi, and Hiroyuki Kamio, all of Hiroshima, Japan, assignors to Babcock-Hitachi Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1978, Ser. No. 966,945

Claims priority, application Japan, Dec. 8, 1977, 52-146583; Dec. 8, 1977, 52-146584

Int. Cl.[3] B01J *21/06, 23/22, 23/28, 35/02*

U.S. Cl. 252—469 14 Claims

1. A method of producing a plate-shaped catalyst unit for NOx reduction of exhaust gas, wherein molten metal is sprayed upon surfaces of a metal plate to allow the molten metal to accumulate thereon to form rough surfaces, and the rough surfaces thus obtained are deposited with a catalyst containing titanium and at least another catalytic material for NOx reduction of exhaust gas whereby the catalyst is firmly secured on the rough surfaces.

4,285,839

VARISTORS WITH UPTURN AT HIGH CURRENT LEVEL

Joe Wong, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 875,116, Feb. 3, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 60,920

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—519 16 Claims

1. A method of producing doped zinc oxide varistor powder useful in forming sintered varistors comprising the steps of:

(A) dissolving a conductivity increasing dopant in a solvent;

(B) forming a slurry by thoroughly mixing zinc oxide powder with the solvent containing the dopant to the extent necessary to achieve the selected concentration of dopant;

(C) removing the solvent from the slurry, whereby the zinc oxide powder particles are coated with the dopant; and

(D) heating the coated zinc oxide powder particles for a time and at a temperature sufficient to cause thermal diffusion of the dopant into the zinc oxide powder particles, but not at a temperature high enough to initiate zinc oxide grain growth.

4,285,840

DETERGENT COMPOSITIONS

Rene Fricker, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 936,730, Aug. 25, 1978, abandoned. This application Feb. 5, 1980, Ser. No. 118,714

Claims priority, application Switzerland, Jan. 25, 1980, 613/80; Jan. 25, 1980, 614/80

Int. Cl.[3] C11D *1/72, 3/30, 3/33, 3/44*

U.S. Cl. 252—546 16 Claims

1. An aqueous detergent composition comprising from 70% to 85% water and, as the active component thereof, from 15% to 30% of a mixture consisting essentially of:

(A) 3 to 6 parts by weight of nitrilotriacetic acid or ethylenediamine tetraacetic acid in free acid or salt form;

(B) 2 to 11 parts by weight of a nonylphenol polyglycol ether having an average of 8 to 12 glycol units per molecule;

(C) 5 to 15 parts by weight of mono-, di- or tri- ethanolamine;

(D) 1 to 3 parts by weight of a block copolymer of propylene oxide and ethylene oxide containing an average of 28 to 32 propylene oxide units per molecule to which an average of 8 to 12% by weight of ethylene oxide units are copolymerized;

(E) 0 to 3 parts by weight of a C_8 to C_{14} branched chain, primary alcohol; and

(F) 0 to 1 parts by weight of a water-soluble, silicone oil,

and, as an optional solvent component thereof, from:

(G) 10 to 40 parts, based on the total weight of the aqueous mixture of active components, of an aliphatic or aromatic hydrocarbon, a chlorinated hydrocarbon, or a mixture thereof; or

(H) 5 to 20 parts, based on the total weight of the aqueous mixture of active components, of a C_1 to C_3 alcohol or a water-soluble glycol, or a mixture of solvent components (G) and (H), with the proviso that when solvent component (G) is absent, active component (B) is present in an amount of from 2 to 6 parts by weight.

4,285,841

HIGHLY CONCENTRATED FATTY ACID CONTAINING LIQUID DETERGENT COMPOSITIONS

Christian R. Barrat, Meise; Jean Wevers, Mazensele, and Robertus J. C. Koster, Grimbergen, all of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 12, 1980, Ser. No. 148,615

Claims priority, application United Kingdom, May 16, 1979, 17133/79

Int. Cl.[3] C11D *1/12*

U.S. Cl. 252—559 12 Claims

1. A highly concentrated homogeneous liquid detergent composition comprising

(a) from about 35% to about 75% by weight of a ternary active system consisting essentially of:

(i) anionic synthetic surface-active salt selected from the group consisting of sulfonates and sulfates having an alkyl radical containing from about 8 to about 22 carbon atoms and wherein the neutralizing cation is selected from the group consisting of sodium, potassium, lithium, amines and substituted amines;

(ii) ethoxylated nonionic surface-active agent derived from alcohols having from 8 to 24 carbon atoms and having from 2 to about 14 moles of ethylene oxide per mole of hydrophobic moiety;

(iii) from about 8% to about 20% by weight of the composition of fatty acid having from about 10 to 18 carbon atoms;

(b) phase regulant which is selected from the group consisting of lower aliphatic alcohols having from 2 to 6 carbon atoms and 1 to 3 hydroxyl groups, esters of diethylene glycol and lower aliphatic monoalcohols having from 1 to 4 carbon atoms, and detergent hydrotropes; and water;

wherein the weight ratio of (i) to (ii) is in the range from about 10:1 to 2:1, and the total amount (weight %) of (i)+(ii) is greater than the total amount (weight %) of (iii), said composition having a pH at 20° C. in the range of from 6.0 to 7.5.

4,285,842

METHOD FOR PRODUCING A FIBROUS FIRE PROTECTION AGENT

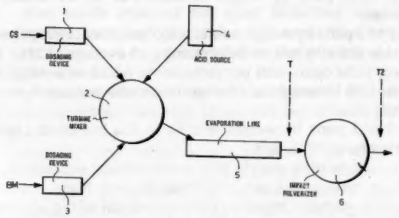
Alfons K. Herr, Stutensee, Fed. Rep. of Germany, assignor to Kataflox Patentverwaltungs-Gesellschaft mbH, Karlsruhe, Fed. Rep. of Germany

Filed Jul. 17, 1979, Ser. No. 58,320

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831633

Int. Cl.³ C09D *5/18*; C09K *3/28*

U.S. Cl. 252—607 **13 Claims**



1. A method for producing a fibrous fire protection agent composed of a fibrous material with boric acid particles adhering to its surface, comprising: providing a wet mass of such fibrous material having a moisture content of up to 80 percent by weight; intimately mixing in a mixer that mass of material with a quantity of powdered boron mineral material; spraying a quantity of concentrated sulfuric acid into the mixer during said mixing step to form a granulate; feeding the resulting granulate onto an evaporation line; and withdrawing the granulate from the evaporation line and comminuting the granulate in an impact pulverizer to form it into the fibrous fire protection agent.

4,285,843

WOOD CHIP BOARD AND PROCESS FOR THE PREPARATION THEREOF

Herbert Mayerhoffer, Vienna, Austria, assignor to Osterreichische Hiag-Werke Aktiengesellschaft, Vienna, Austria

Filed Apr. 21, 1980, Ser. No. 141,844

Claims priority, application Austria, Apr. 23, 1979, 3040/79

Int. Cl.³ C08L *1/02*

U.S. Cl. 260—17.3 **12 Claims**

1. A wood chip board the binder of which is an aminoplast, in which the amount of solid resin binder in the area of the board surfaces is less than about 8% by weight of the absolutely dry calculated chip material in the board surface, and the amount of solid resin binder in the area of the center of the board calculated as a wt. percentage based on the absolutely dry chip material present at the center, is equal to or greater than in the board surfaces.

4,285,844

AQUEOUS COATINGS BASED ON COPOLYMERS WITH A MIXTURE OF POLYMERIC POLYOL AND BISPHENOL-PROPYLENE OXIDE ADDUCT

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Jan. 10, 1980, Ser. No. 111,077

Int. Cl.³ C08L *33/06*

U.S. Cl. 260—23 EP **8 Claims**

1. A low temperature-curing aqueous coating composition comprising water having dispersed therein with the aid of a volatile base, an acidic solution copolymer of:

(1) monoethylenically unsaturated monomers, including about 2% to about 20% of carboxylfunctional monomer based on the weight of the copolymer; with

(2) a mixture of ethylenically unsaturated esters of:

(A) ethylenically unsaturated fatty acids with

(B-1) organic solvent and water insoluble polymeric polyol and

(B-2) water insoluble bisphenol-propylene oxide adduct polyol,

there being a total of more than two moles of unsaturated fatty acid per mol of said polymeric polyol, and said bisphenol-propylene oxide polyol constituting from 10% to 125% of the weight of said polymeric polyol.

4,285,845

UNSATURATED POLYESTER RESINS

Robert F. Russell, Wellingborough, England, assignor to Scott Bader Company Limited, Wellingborough, England

Filed Aug. 3, 1979, Ser. No. 63,134

Claims priority, application United Kingdom, Aug. 8, 1978, 32554/78; Feb. 1, 1979, 3499/79

Int. Cl.³ C08L *67/06, 91/08*

U.S. Cl. 260—28 R **10 Claims**

1. An unsaturated polyester resin composition for ambient temperature open lay-up moulding containing styrene as an agent for cross-linking during curing, a waxy compound selected from the group consisting of stearyl stearate and paraffin, and 0.1 to 5% by weight of at least one compound which is present to allow said waxy compound to be present in amounts which restrict styrene evaporation, which compound is theoretically capable of taking part in the cross-linking reaction and is of the formula

$$R\leftarrow X\rightarrow_n C=CH_2$$

wherein

Y is selected from the group consisting of hydrogen and methyl,

R is selected from the group consisting of straight and branched-chain and unsubstituted and, substituted aliphatic C_6–C_{24} hydrocarbons,

n is a value selected from zero and 1 and

X is selected from the group consisting of

$$-O-\overset{\overset{O}{\|}}{C}-,\quad -\overset{\overset{O}{\|}}{C}-O-\quad \text{and} \quad -O-.$$

4,285,846

FLATTED WATER-REDUCIBLE COATING COMPOSITIONS AND METHOD FOR PRODUCING SAME

John F. Hardy, Andover; Donald P. Kintz, Westford, and Vaughn W. Taylor, Lynn, all of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Apr. 28, 1980, Ser. No. 144,345

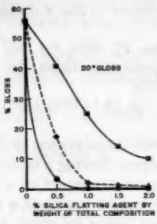
Int. Cl.³ C08L *67/02, 63/00*

U.S. Cl. 260—29.2 E **15 Claims**

1. In a method for preparing a water-reducible coating composition comprising the steps of preparing a mill paste of the coating solids, including a water-miscible film forming resin, and thereafter letting down said mill paste with a predominantly aqueous solvent comprising at least 75 percent by weight of water, the improvement which comprises:

flatting the composition by admixing therewith an aqueous dispersion of a finely-divided particulate silica flatting

agent during or subsequent to said let-down of said mill paste, the quantity of said silica flatting agent so admixed



being between about 0.25 and about 5 percent by weight of the total composition.

4,285,847

POLYMERIZATION PROCESS AND PRODUCT

Vincent W. Ting, Boulder, Colo., assignor to SCM Corporation, Cleveland, Ohio

Filed Apr. 11, 1979, Ser. No. 29,106
Int. Cl.³ C08L *63/00*
U.S. Cl. 260—29.2 EP **46 Claims**

1. A process for addition polymerizing through its ethylenic unsaturation a quantity of Q parts by weight of addition polymerizable ethylenically unsaturated monomer in an aqueous medium using free radical initiation which comprises:

(a) incorporating a quantity Q of an ethylenically unsaturated addition polymerizable monomer and initiator therefor, in an aqueous, liquid reaction medium that is a dispersion in an aqueous vehicle of a resinous dispersoid of at least 0.3 Q to about 20 Q or more of at least one ionized polymer comprising a graft copolymer having a backbone including aliphatic carbon atoms on which an ionizable addition polymer side chain is bonded by a carbon-to-carbon bond in place of a hydrogen atom that is bonded thereto in the ungrafted state, said graft copolymer being formed by grafting at least one addition polymerizable monomer, including ionizable monomer, onto a polymer substrate selected from the group consisting of: homopolymers and copolymers of vinyl chloride; homopolymers and copolymers of acrylic monomers; hydrocarbon resins from butadiene, styrenes, and coumaroneindenes; polyurethanes; polyesters; and aromatic epoxy resins; to form at least one side chain bonded by carbon-to-carbon grafting to one of said backbone carbons, the ionization being on the side chain, and from zero up to about 20 Q of at least one other polymer that is selected from said group and that is not appreciably ionic in nature, thereby providing an initial reaction medium having a continuous aqueous liquid phase and polymeric dispersed phase, said reaction medium also including an amount up to 200% by weight of said resinous dispersoid of an organic liquid that is miscible with water and that comprises a solvent for at least some of the solids of said dispersoid;

(b) polymerizing said monomer at a temperature at least as high as about room temperature and under pressure sufficient for keeping the continuous aqueous phase in a liquid state, and in the presence of a sufficient amount of said initiator for causing addition polymerization of said monomer at said temperature;

the amount of water initially present in said aqueous vehicle and any amount of water that is added during said addition polymerization being sufficient for keeping the solids content of the reaction mixture from step (b) above from exceeding about 60% by weight of the reaction mixture at any time.

4,285,848

WOOD ADHESIVE FROM PHENOL, FORMALDEHYDE, MELAMINE AND UREA

Charles H. Hickson, New Albany, Ind., assignor to Borden, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 929,527, Jul. 31, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,529
Int. Cl.³ C08G *14/08, 14/10*; C08L *61/14, 61/28*
U.S. Cl. 260—29.3 **7 Claims**

1. A wood adhesive composition prepared from phenol, formaldehyde, melamine, and urea in a molar proportion per 1 mole of phenol of between about 6 and 8.24 moles of formaldehyde, between about 1 and 1.6 moles of melamine, and between about 1.6 and 3.3 moles of urea, said composition prepared by the steps of:

(a) charging said phenol and said formaldehyde into a reactor held under condensing and basic conditions;

(b) adding said melamine to said reactor, and adjusting and maintaining condensing conditions to a pH of between about 8.5 and 9.5 at a temperature of between about 85° and 100° C. until all of said melamine is condensed indicated by the contents of said reactor being clear; and

(c) adding said urea to said reactor and maintaining urea condensing conditions until the condensate product in said reactor has a water tolerance of between about 70% and 180%.

4,285,849

AMIDATION REACTION PRODUCTS OF POLYAMINES AND POLYCARBOXYL CONTAINING MATERIALS AND COATING COMPOSITIONS CONTAINING SAME

Rostyslaw Dowbenko, Gibsonia; Karl F. Schimmel, Verona, and Jerome A. Seiner, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 27, 1979, Ser. No. 97,619
Int. Cl.³ C08L *61/10, 61/20*
U.S. Cl. 260—29.6 NR **31 Claims**

1. An ungelled amidation product containing primary amine groups, secondary amine groups or a mixture thereof and carboxyl groups obtained by the reaction of (1) a polyamine containing aliphatic amine groups and having at least one ether group with (2) a polycarboxyl-containing material selected from the group consisting of an acrylic resin, polyester resin, polyamide resin, or mixture thereof and wherein the carboxyl content of the polycarboxyl-containing material ranges from about 0.5 milliequivalents to about 12 milliequivalents of carboxyl per gram.

4,285,850

ADHESION OF POLYAMIDE OR POLYESTER CORDS TO RUBBER

Terry C. Neubert, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 32,071, Apr. 23, 1979, Pat. No. 4,251,409. This application Mar. 3, 1980, Ser. No. 126,744
Int. Cl.³ C08L *51/00, 39/08*
U.S. Cl. 260—29.6 RB **3 Claims**

1. A composition of matter comprising an aqueous alkaline dispersion of a rubbery graft low gel vinyl pyridine copolymer consisting essentially of

(a) a core of a copolymer of butadiene-1,3 and styrene in the parts by weight ratio of butadiene-1,3 to styrene of about 40:60 to 60:40 and having a gel content of from about 0 to below 40% and

(b) a shell of a copolymer of butadiene-1,3 and a vinyl pyridine and having a gel content of from about 0 to below 70% and

(c) wherein in said graft copolymer the total amount of said monomers is from about 47 to 69% by weight of butadiene-1,3, from 23 to 52% by weight of styrene and from 1 to 8% by weight of the vinyl pyridine.

4,285,851

PROCESS FOR CONTROLLED GELATION OF POLYMERIC SOLUTION (C-974)

Henry S. Makowski, Scotch Plains, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 3, 1980, Ser. No. 136,834
Int. Cl.³ C08L 23/32
U.S. Cl. 260—29.6 SQ 31 Claims

1. A process for increasing the low shear solution viscosity which includes the steps of:

(a) dissolving an amine terminated polyalkylene oxide neutralized sulfonated polymer in a solvent to form a polymeric solution, a concentration of said amine terminated polyalkylene oxide neutralized sulfonated polymer in said polymer solution being about 0.1 to about 20 wt. %. a viscosity of said polymeric solution being about 10 to about 5,000 cps; and

(b) adding about 1 to about 500 volume % water to said solution, said water being immiscible with said polymeric solution, the viscosity of said solution or suspension increasing upon the addition of said water to at least 50,000 cps.

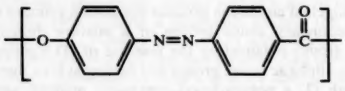
4,285,852

ANISOTROPIC WHOLLY AROMATIC POLYESTER DERIVED FROM 4-HYDROXY-4'-CARBOXY AZOBENZENE AND PROCESS FOR PREPARATION

Anthony J. East, Madison, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jan. 4, 1980, Ser. No. 109,575
Int. Cl.³ C08G 63/02
U.S. Cl. 260—37 R 47 Claims

1. A wholly aromatic polyester capable of forming an anisotropic melt comprising the recurring unit:



which may include substitution of at least one hydrogen atom present upon an aromatic ring with said optional substitution if present being selected from the group consisting of an alkyl radical of 1 to 4 carbon atoms, an alkoxy radical of 1 to 4 carbon atoms, halogen, and mixtures thereof.

4,285,853

CRACK-RESISTANT EPOXY RESIN MOLDING COMPOSITION WITH WOLLASTONITE

Bruno Schreiber, Aesch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 6, 1979, Ser. No. 72,952
Claims priority, application Switzerland, Sep. 18, 1978, 9724/78
Int. Cl.³ C08L 63/02
U.S. Cl. 260—37 EP 7 Claims

1. An epoxy resin moulding composition consisting of an epoxy resin which contains more than 1 epoxide equivalent per kg of epoxy resin and is solid at room temperature, a solid anhydride hardener in an amount such that the number of anhydride groups per epoxy group is 1.5 to 0.5, and one or more fillers in an amount between 50 and 80% by weight, based on the moulding composition, wherein

(a) the expoxy resin is one based on diglycidyl ethers of bisphenols,

(b) the hardener is an anhydride of a dicarboxylic acid, and

(c) at least half of the total amount of filler consists of wollastonite.

4,285,854

ELASTOMER TIRE FILLING MATERIAL

Kunio Kageyama, Tokohama, and Tetsuo Hayashi, Hiratsuka, both of Japan, assignors to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,428
Claims priority, application Japan, Jun. 20, 1979, 54-77711; Feb. 26, 1980, 55-23238
Int. Cl.³ C08G 18/62
U.S. Cl. 260—37 N 7 Claims

1. A tire filling material comprising an elastomer obtained by reacting (A) a prepolymer having a terminal isocyanate group with (B) a curing agent composed of a compound having a terminal hydroxyl or amino group at a ratio satisfying a requirement represented by the following formula (I):

$$0.7 \leqq \frac{A}{B} \leqq 1.3 \quad \text{(I)}$$

wherein A stands for the number of NCO groups in the prepolymer (A) and B stands for the number of OH or NH_2 groups in the curing agent (B),

said prepolymer (A) containing a product obtained by reacting (C) a polymer containing at least a diene polymer having a terminal hydroxyl group and a molecular weight lower than 10,000 with a diisocyanate compound at a ratio satisfying a requirement represented by the following formula (II):

$$1.6 \leqq \frac{D}{C} \leqq 3.0 \quad \text{(II)}$$

wherein D stands for the number of NCO groups in the diisocyanate compound and C stands for the number of OH groups in the polymer (C).

4,285,855

FIRE-RETARDANT POLYCARBONATE COMPOSITION

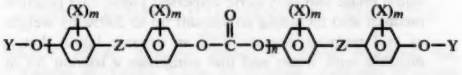
Toshimasa Tokuda, Iyo, Japan, assignor to Teijin Chemicals Ltd., Tokyo, Japan

Division of Ser. No. 958,487, Nov. 7, 1978, Pat. No. 4,222,910. This application Mar. 19, 1980, Ser. No. 131,852
Claims priority, application Japan, Nov. 10, 1977, 52-134107; Dec. 21, 1977, 52-152969; Jan. 19, 1978, 53-3749; Aug. 16, 1978, 53-99017; Aug. 16, 1978, 53-99018
Int. Cl.³ C08K 5/42; C08L 81/08, 69/00
U.S. Cl. 260—45.75 9 Claims

1. A fire retardant resin composition comprising

(1) a polycarbonate which is the reaction product of a dihydric phenol with either phosgene or a carbonic acid diester, and

(2) as a fire retardant, at least one compound selected from the group consisting of compounds of the formula



wherein X represents a halogen atom, m is an integer of 0 to 4, Y independently represents a hydrogen atom, an aliphatic or aromatic group containing 1 to 20 carbon atoms, or the group —R—SO_3M in which R represents an alkylene group containing 1 to 10 carbon atoms and M represents an alkali metal or an alkaline earth metal, at least one of the Y groups being the group —R—SO_3M, and Z represents an alkylene or alkylidene group containing 1 to 9 carbon atoms, a cycloalkylene or cycloalkylidene group containing 5 to 15 carbon atoms, O, S, SO, SO_2, CO or CO_2, and n is a number of 1 to 200.

4,285,856
ORGANO-TIN COMPOUNDS, PROCESS FOR THEIR PREPARATION AND THEIR USE

Wolfgang Wehner, Zwingenberg, and Gerd Abeler, Darmstadt, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

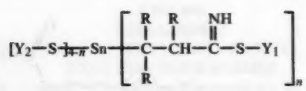
Filed Feb. 6, 1980, Ser. No. 118,898

Claims priority, application Switzerland, Feb. 14, 1979, 1467/79

Int. Cl.[3] **C07F** *7/22;* **C08K** *00/00*

U.S. Cl. 260—45.75 S **9 Claims**

1. A compound of the formula (I)



(I)

in which the radicals R independently of one another are hydrogen or C_1–C_{14} alkyl and Y_1 and Y_2 are both identical and are C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_5–C_8 cycloalkyl, C_6–C_{10} cycloalkylalkyl, C_6–C_{14} aryl, which is unsubstituted or substituted by C_1–C_8 alkyl, or C_7–C_{20} aralkyl or $-(CH_2)_m-COO(C_{1-4}$ alkyl), or if Y_1 is $-(CH_2)_m-COO-(C_{1-4}$ alkyl), Y_2 can also be the group $-(CH_2)_m-COO(C_{5-20}$ alkyl), and in which m is a number from 1 to 6 and n is 1 or 2.

4,285,857
CYCLIC ANALOGUES OF CALLIDINE

Gunar I. Chipens, ulitsa Apes, 12, kv. 81; Felix K. Mutulis, ulitsa Bikernieku, 77, kv. 52; Olga E. Lando, ulitsa Berzupes, 31a, kv. 21, and Natalia V. Myshlyakova, ulitsa Gorkogo, 33, kv. 18, all of Riga, U.S.S.R.

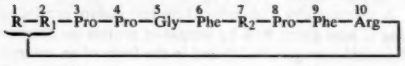
Filed Sep. 26, 1979, Ser. No. 78,950

Claims priority, application U.S.S.R., Sep. 29, 1978, 2699155

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **5 Claims**

1. Cyclic analogues of callidine of the formula:



wherein Pro is a moiety of L-proline, Gly - that of glycine, Phe is a moiety of L-phenylalanine; Arg - that of L-arginine; R is a residue of α- or ω-lysine or arginine; R_1 is a residue or α- or ω-lysine or arginine; R_2 is L-serine, and the carbonyl group of arginine is connected with either R or R_1 by means of a covalent peptide bond using the ω-amino group of the R or R_1 located at 1 or 2 position of callidine.

4,285,858
VASOPRESSIN ANALOGS

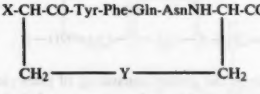
Joseph H. Cort, New York, N.Y., and Alan Fischman, New Haven, Conn., assignors to Mt. Sinai School of Medicine of the City University of N.Y., New York, N.Y.

Filed Oct. 30, 1979, Ser. No. 89,510

Int. Cl.[3] **C07C** *103/52;* **A61K** *37/00*

U.S. Cl. 260—112.5 R **6 Claims**

1. A vasopressin analog having the general schematic formula:



wherein X is selected from the group consisting of H and NH_2 and Y is selected from the group consisting of —S—S—, $-CH_2S-$ and $-SCH_2-$ and A=L when B=D and A=D when B=L.

4,285,859
AZO COMPOUNDS USEFUL IN A PHOTOGRAPHIC DYE DIFFUSION TRANSFER PROCESS

Rainer Kitzing, Ingatestone; Brian R. D. Whitear, Brentwood; William E. Long, Brentwood; David L. R. Reeves, Brentwood, and Glenn P. Wood, Brentwood, all of England, assignors to Ciba-Geigy AG, Switzerland

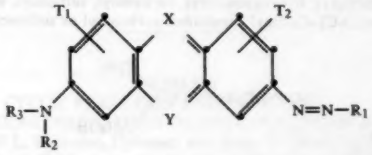
Filed Feb. 23, 1979, Ser. No. 14,778

Claims priority, application United Kingdom, Feb. 28, 1978, 7788/78

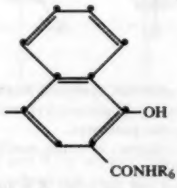
Int. Cl.[3] **C09B** *29/06, 29/08, 29/24, 29/36*

U.S. Cl. 260—152 **15 Claims**

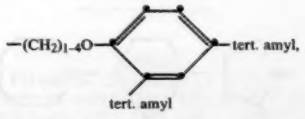
1. An azo dye of the general formula



where X is N or CR_4 where R_4 is a hydrogen atom, alkyl having 1 to 4 carbon atoms, phenyl, phenyl substituted by carboxyl, alkyl having 1 to 4 carbon atoms, hydroxy or halogen, Y is S^+, N^+R_5, O^+ or N where R_5 is alkyl having 1 to 4 carbon atoms, phenyl, phenyl substituted by alkyl having 1 to 4 carbon atoms, halogen, hydroxy or carboxyl, R_1 is a group of the formula



wherein R_6 is a group of the formula



R_2 and R_3 are each hydrogen atoms or alkyl groups having 1 to 4 carbon atoms, or R_2 and R_3 together with the nitrogen atom complete a 5- or 6-membered heterocyclic ring, or one of R_2 and R_3 can be hydrogen and the other of R_2 and R_3 can be phenyl, and T_1 and T_2 represent hydrogen atoms, alkyl having 1 to 4 carbon atoms, amino groups, halogen or form a benzannelated ring.

4,285,860
TRISAZO OR TETRAKISAZO DYES CONTAINING A HETEROCYCLIC GROUP

Guenter Hansen, Ludwigshafen; Hans J. Kolbinger, Gruenstadt; Horst Scheuermann, Ludwigshafen, and Georg Zeidler, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

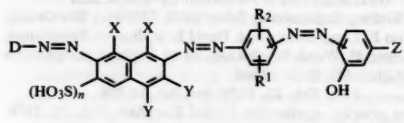
Filed Jan. 16, 1980, Ser. No. 112,635

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1979, 2903588

Int. Cl.[3] **C09B** *31/22, 31/30, 33/22, 33/28*

U.S. Cl. 260—152 **2 Claims**

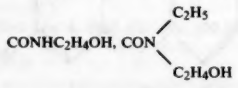
1. A polyazo dye which in the form of the free acid corresponds to the formula



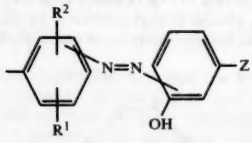
[I]

where

D is selected from the group consisting of phenyl; phenyl substituted by chlorine, bromine, C_1–C_4-alkyl, C_1–C_4-alkoxy, phenoxy, C_1–C_4-alkylsulfonyl, trifluoromethyl, carboxyl, hydroxysulfonyl, carbamoyl, sulfamoyl, mono- or di-C_1–C_8-alkyl substituted carbamoyl or sulfamoyl,



phenylazo, or phenylazo substituted by chlorine, C_1–C_4-alkoxy or hydroxysulfonyl; naphthyl substituted by hydroxysulfonyl; and



n is 0 or 1,

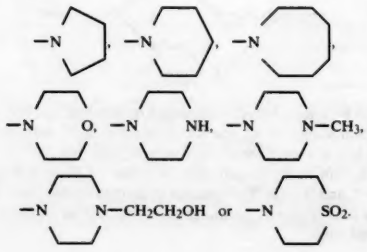
R^1 is hydrogen, chlorine, bromine, methyl, ethyl, methoxy, ethoxy, carboxyl, trifluoromethyl, methylsulfonyl, ethylsulfonyl or hydroxysulfonyl,

R^2 is hydrogen, chlorine, bromine, methyl, methoxy, carbamyl or sulfamyl,

one X is hydroxyl and the other X is amino,

Y is hydrogen or hydroxysulfonyl, but at least one Y is hydroxysulfonyl and

Z is



4,285,861
SULFONATED NAPTHO[1,2]TRIAZOLE AZO BARBITURIC ACID DERIVATIVES

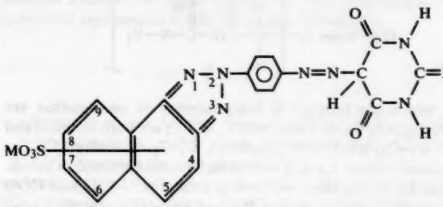
David A. Brode, Birdsboro, and Howard L. Smith, Douglassville, both of Pa., assignors to Crompton & Knowles Corporation, New York, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,324

Int. Cl.[3] **C09B** *29/036, 29/52;* **D21D** *3/00;* **D21H** *3/80*

U.S. Cl. 260—154 **5 Claims**

1. The compound having the structure:



wherein M is H, Na, K, Li, $N(R)_3H$ and R is H, alkyl and lower hydroxalkyl and R_1 is oxygen, sulfur, imino, lower alkylimino, cyanoimino and carbamoylimino.

4,285,862
PROTEIN ISOLATE PRODUCT

E. Donald Murray, Winnipeg; Chester D. Myers, Ajax, and Larry D. Barker, Cobourg, all of Canada, assignors to General Foods, Limited, Toronto, Canada

Continuation-in-part of Ser. No. 972,202, Dec. 22, 1978, abandoned, which is a continuation of Ser. No. 832,036, Sep. 12, 1977, Pat. No. 4,169,090. This application Oct. 3, 1979, Ser. No. 81,484

Int. Cl.[3] **A23J** *1/12, 1/14*

U.S. Cl. 260—123.5 **11 Claims**

1. A substantially undenatured protein isolate product containing at least about 90% by weight of protein (as determined by Kjeldahl nitrogen×6.25) and in the form of an amorphous protein mass which is formed by settling the solid phase from an aqueous dispersion of protein micelles consisting of homogeneous amphiphilic protein moieties and formed from at least one plant protein source material, said product having substantially no lipid content, substantially no lysinoalanine content and substantially the same lysine content as the storage protein in the source material.

4,285,863
PIGMENT COMPOUNDS AND METHOD OF PREPARATIONS

Ruggero Battisti; Francesco Casagrande, both of Novara, and Giovanni Bausani, Trecate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

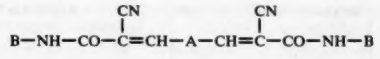
Filed Jun. 25, 1979, Ser. No. 51,443

Claims priority, application Italy, Jun. 26, 1978, 24947 A/78

Int. Cl.[3] **C09B** *43/00, 56/00, 57/00;* **D06P** *1/44*

U.S. Cl. 260—176 **1 Claim**

1. A bis-methinic pigment compound having the formula



wherein: A is selected from the group consisting of phenylene, 2,5-dimethoxyphenylene, 2,5-dichlorophenylene, naphthylene, diphenyl and anthracylene, and B is selected from the group consisting of azobenzene, azotoluene, 2-methoxy-5-benzani-

lide, 2-methoxy-3',4'-chloroazobenzene, 2-hydroxy-5-methyl-benzene; 2-methoxy-5-benzoylamino-benzene, 2-methoxy-5-ureido-benzene, 2-chloro-5-carboxy-benzene, 2,4-dichloro-benzene, 2,5-dimethoxy-4-chloro-benzene, benzothiazole, 1-(3-chlorophenyl)-pyrazole, 1-(3,4-dichlorophenyl)-pyrazole, indazole, 2,4-dimethoxybenzene, 4-dimethyl-amino-benzene, benzimidazolone, 2-methoxy-5-acetylamino-benzene and 2-methoxy-benzene.

4,285,864

DISULFONIC PHENYL-AZO-NAPHTHYL-AZO-PHENYL ALKOXY DYES FOR POLYAMIDES

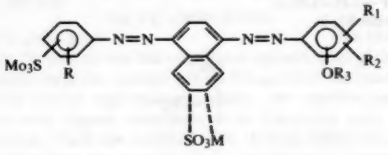
James F. Feeman, Wyomissing, Pa., assignor to Crompton & Knowles Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 80,135, Oct. 12, 1970, abandoned, and Ser. No. 457,828, Apr. 4, 1974, abandoned. This application Mar. 17, 1976, Ser. No. 667,678

Int. Cl.[3] **C09B** *31/062;* **D06P** *1/39, 3/16, 3/24*

U.S. Cl. 260—191 **8 Claims**

1. A compound having the structure:



wherein R represents —H, —CH_3 or —Cl; R_1 represents —H or —CH_3; R_2 represents —H, —CH_3 or —OCH_3; R_3 represents —CH_3 or —C_2H_5 and M represents —H, —Li, —Na, —K or —N—$(R_4)_4$ wherein R_4 rerepresents the same substituent or different substituents selected from the following: —H, —CH_2—CH_2OH, —$CH_2CH(OH)CH_3$ or —CH $CH_2OCH_2CH_2OH$.

4,285,865

PROCESS FOR THE PREPARATION OF HALOGENATED 15-HYDROXY-E-HOMOEBURNANE COMPOUNDS

Csaba Szantay; Lajos Szabo; György Kalaus; Lajos Dancsi; Tibor Keve, and Ferenc Drexler, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

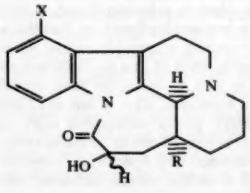
Filed Aug. 5, 1980, Ser. No. 175,385

Claims priority, application Hungary, Aug. 6, 1979, RI 721

Int. Cl.[3] **C07D** *487/14, 487/16*

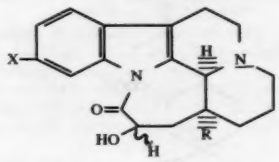
U.S. Cl. 260—239.3 P **4 Claims**

1. A process for the preparation of a racemic or optically active compound of the formulae (Ia) or (Ib),



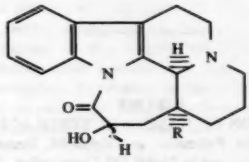
(Ia)

-continued



(Ib)

wherein R is C_{1-6} alkyl and X is halogen, which comprises reacting a racemic or optically active 15-hydroxy-E-homo-eburnane derivative of the formula (II),



(II)

wherein R is as defined above; or an acid addition salt thereof, with a halogenating agent.

4,285,866

CYCLIC PERKETALS AND THEIR USE FOR CROSS-LINKING HIGH DENSITY POLYETHYLENE

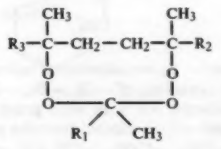
Ronald L. Pastorino, Larkspur, and Roger N. Lewis, Martinez, both of Calif., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 688,874, May 21, 1976, which is a continuation-in-part of Ser. No. 591,783, Jun. 30, 1975, abandoned. This application Feb. 28, 1977, Ser. No. 772,407

Int. Cl.[3] **C07D** *323/00*

U.S. Cl. 260—338 **5 Claims**

1. An organic peroxide of the formula:



wherein each of R_2 and R_3 is selected from methyl and ethyl and R_1 is an alkyl carboxylate ester group of up to about 10 carbon atoms in which the acid moiety of the ester is bonded to the ring carbon atom.

4,285,867

PHARMACOLOGICALLY ACTIVE 4-[2-HYDROXY-4-(SUBSTITUTED)PHENYL]NAPHTHALEN-2(1H)-ONES AND 2-OLS, DERIVATIVES THEREOF AND INTERMEDIATES THEREFOR

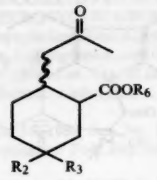
Michael R. Johnson, Gales Ferry, and Lawrence S. Melvin, Jr., Ledyard, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 19, 1980, Ser. No. 189,402

Int. Cl.[3] **C07D** *321/00*

U.S. Cl. 260—338 **1 Claim**

1. A compound having the formula



wherein R_6 is hydrogen or C_{1-4} alkyl; and R_2 and R_3 taken together are alkylenedioxy having from two to four carbon atoms.

4,285,868

PREPARATION OF GAMMA-BUTYROLACTONES

El-Ahmadi I. Heiba, Princeton, and Ralph M. Dessau, Edison, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

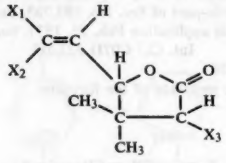
Continuation-in-part of Ser. No. 336,857, Feb. 28, 1973, Pat. No. 4,175,089, which is a continuation-in-part of Ser. No. 30,582, Apr. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 714,447, Mar. 20, 1968, abandoned. This application Aug. 25, 1977, Ser. No. 827,654

The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.

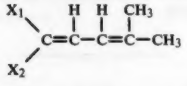
Int. Cl.³ C07D *307/32*

U.S. Cl. 260—343.6 **10 Claims**

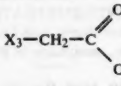
1. A method for the production of a gamma-butyrolactone having the structure



wherein $-X_1$ and $-X_2$ are substituents individually selected from the group consisting of —Cl, —Br, —CN, $-COCH_3$, and COOAlk wherein Alk is an alkyl group with up to six carbon atoms, and $-X_3$ is selected from the group consisting of hydrogen, $-CH_3$, $-C_2H_5$, —CN and —COOH, which comprises: reacting, under reaction conditions, a diene having the structure



wherein $-X_1$ and $-X_2$ are as hereinabove described, with a carboxylic acid having the structure



wherein $-X_3$ is as hereinabove described, in the presence of a stoichiometric amount of tetravalent cerium or trivalent manganese salt; and recovering said gamma-butyrolactone.

4,285,869

19-HYDROXY-6-HYDROXY-7A-HOMO-PGI$_1$ COMPOUNDS

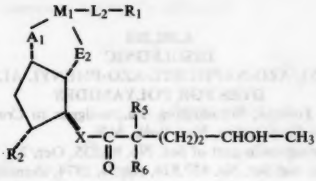
John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,479

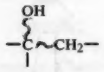
Int. Cl.³ C07D *311/02*

U.S. Cl. 260—345.2 **2 Claims**

1. A prostacyclin-type compound of the formula



wherein A_1 is —O— (oxa) and E_2 is $-CH_2CH_2-$;
wherein L_2 is
(1) $-(CH_2)_j-$, wherein j is one to 4, inclusive,
(2) $-(CH_2)_q-CF_2-$, wherein q is one, 2, or 3; or
(3) —CH=CH—;
wherein M_1 is



wherein Q is oxo, α-H:β-H, α-OH:β-R$_4$, or α-R$_4$:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) $-COOR_3$,
(2) $-CH_2OH$,
(3) $-CH_2N(R_7)(R_8)$,
(4) $-CO-N(R_7)(R_8)$,
(5) $-CO-NH-SO_2-R_{15}$, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{16}$,
wherein —(Ph)— is inter-phenylene and —(p-Ph) is inter-para-phenylene or para-phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of 2 to 4 carbon atoms, inclusive, wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl, wherein R_5 and

R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and

wherein X is

(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) —CH_2CH_2—.

4,285,870

PROCESS FOR CONTINUOUSLY SEPARATING PHTHALIC ANHYDRIDE FROM THE REACTION GASES OF THE CATALYTIC OXIDATION OF O-XYLENE AND/OR NAPHTHALENE

Gerhard Keunecke, Geyen; Anton Klopfer, Cologne, and Lothar Sterck, Hürth, all of Fed. Rep. of Germany, assignors to Davy International Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 106,503

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2855629

Int. Cl.³ C07D *307/89*

U.S. Cl. 260—346.7 15 Claims

1. In the process for the continuous separation of phthalic anhydride from the reaction gas of the catalytic oxidation of o-xylene and/or naphthalene whereby said reaction gas is treated with organic absorbents in an absorption zone, the absorbents, which are enriched with phthalic anhydride, are withdrawn from the absorption zone, absorbents are generated by separation of the phthalic anhydride therefrom and are returned to the absorption zone, the improvement which comprises treating the reaction gas in a first absorption stage with a liquid mixture comprising benzoic acid and phthalic anhydride, and in at least one additional absorption stage with a liquid, maleic anhydride-based absorbent containing from 0 to about 85% by weight phthalic anhydride.

4,285,871

PROCESS FOR CONTINUOUSLY SEPARATING PHTHALIC ANHYDRIDE FROM THE REACTION GASES OF THE CATALYTIC OXIDATION OF O-XYLENE AND/OR NAPHTHALENE

Gerhard Keunecke, Geyen; Anton Klopfer, Cologne, and Lothar Sterck, Hürth, all of Fed. Rep. of Gemany, assignors to Davy International Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,052

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855630

Int. Cl.³ C07D *307/89*

U.S. Cl. 260—346.7 11 Claims

1. In the process for the continuous separation of phthalic anhydride from the reaction gas of the catalytic oxidation of o-xylene and/or naphthalene whereby said reaction gas is treated with an organic absorbent in an absorption zone, the absorbent, which is loaded with phthalic anhydride is withdrawn from the absorption zone, the absorbent is separated from said phthalic anhydride, and the separated absorbent is returned to the absorption zone, the improvement which comprises treating the reaction gas with a maleic anhydride-based absorbent containing from 0 to about 85% by weight phthalic anhydride.

4,285,872

METHOD FOR PRODUCING GLYCIDYL (METHA)ACRYLATE

Rippei Tanabe, Nishinomiya; Yuji Yokoyama, Kobe, and Jiro Hirano, Takatsuki, all of Japan, assignors to Nippon Oil and Fats Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 910,529, May 30, 1979, abandoned. This application Aug. 1, 1979, Ser. No. 62,621

Claims priority, application Japan, Jun. 6, 1977, 52/65849

Int. Cl.³ C07D *301/00*

U.S. Cl. 260—348.12 6 Claims

1. A method for producing glycidyl methacrylate or glycidyl acrylate, which comprises using a metal salt, selected from the group consisting of potassium, sodium, and calcium salts, of a fatty acid having from 2 to 22 carbon atoms, as a catalyst in an ester interchange reaction of methyl methacrylate or methyl acrylate and glycide, wherein the molar ratio of methyl methacrylate or methyl acrylate to glycide is 15:1 to 2:1, the reaction being carried out at a temperature of 40°–100° C. under reduced pressure while introducing a small amount of air into the reaction mixture, by-product methanol being continuously removed as an azeotropic mixture with an excess amount of methyl methacrylate or methyl acrylate.

4,285,873

ADRENERGIC BLOCKING AGENTS

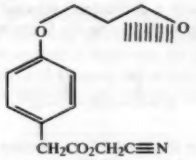
Kenneth E. Fahrenholtz, Bloomfield; Robert W. Guthrie, Saddle Brook; Richard W. Kierstead, North Caldwell, and Jefferson W. Tilley, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 73,051, Sep. 6, 1979, Pat. No. 4,247,710, which is a division of Ser. No. 875,966, Feb. 8, 1978, Pat. No. 4,202,978. This application Aug. 22, 1980, Ser. No. 180,245

Int. Cl.³ C07D *303/46, 303/38*

U.S. Cl. 260—348.45 1 Claim

1. The compound of the formula



4,285,874

1-ISOCYANATO-ANTHRAQUINONES

Rudolf Braden, Odenthal-Scheuren, and Rütger Neeff, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 74,690

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842539

Int. Cl.³ C07C *101/80, 103/75, 118/02*

U.S. Cl. 260—376 4 Claims

1. A process for the preparation of a 1-isocyanato-anthraquinone, comprising introducing an anthraquinone into phosgene or a solution of phosgene in an inert anhydrous solvent at −10° to 50° C., heating the reaction mixture to 100° to 200° C. while passing phosgene through it, and subsequently expelling phosgene and hydrogen chloride from the reaction mixture with an inert medium which is gaseous under the reaction conditions.

4,285,875

PROCESS FOR PREPARING CARBOXYLIC ACIDS BY CATALYTIC OXIDATION OF ALDEHYDES

Boy Cornils; Werner De Win, both of Dinslaken, and Jürgen Weber, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jul. 28, 1980, Ser. No. 172,620

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931154

Int. Cl.³ C07C *53/00*

U.S. Cl. 260—413 **17 Claims**

1. A process for preparing carboxylic acids comprising reacting the corresponding aldehyde in the presence of a catalyst comprising the anion $[Fe(CN)_5H_2O]^{-3}$.

4,285,876

ISOCYANATE ADDUCTS WITH β-DIKETONES

Luigi Giuffre, Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Vertac, Inc., Memphis, Tenn.

Filed Oct. 10, 1979, Ser. No. 83,399

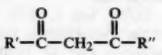
Int. Cl.³ C07C *119/042, 125/063*

U.S. Cl. 260—453 SP **13 Claims**

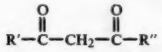
1. A process for the production of the adduct of an isocyanate having the formula

$$R{-}N{=}C{=}O$$

wherein R is a member selected from the group consisting of alkyl having from 1 to 10 carbon atoms and alkenyl having 2 to 6 carbon atoms with a β-diketone selected from the group consisting of compounds having the formula



wherein R′ is lower alkyl and R″ is a member selected from the group consisting of lower alkyl, alkoxy, phenyl and when taken together, lower alkylene having 2 to 6 carbon atoms, and decalin-1,8-dione, consisting essentially of the steps of reacting said isocyanate with a β-diketone selected from the group consisting of compounds having the formula

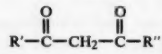


wherein R′ is lower alkyl and R″ is a member selected from the group consisting of lower alkyl, alkoxy, phenyl and when taken together, lower alkylene having 2 to 6 carbon atoms, and decalin-1,8-dione, in a molar ratio of 1:1 to a molar excess of β-diketone at a temperature between 25° C. and 100° C., to form said adduct.

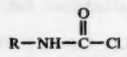
6. A process for storing and transporting an isocyanate having the formula

$$R{-}N{=}C{=}O$$

wherein R is a member selected from the group consisting of alkyl having from 1 to 10 carbon atoms and alkenyl having from 2 to 6 carbon atoms, consisting of the steps of (1) reacting said isocyanate with a β-diketone selected from the group consisting of compounds having the formula



wherein R′ is lower alkyl and R″ is a member selected from the group consisting of lower alkyl, alkoxy, phenyl and when taken together, lower alkylene having 2 to 6 carbon atoms, and decalin-1,8-dione, or reacting a carbamoyl chloride having the formula



with said β-diketone, to form an adduct, (2) maintaining said adduct at temperatures below the decomposition temperature for the time desired, and (3) heating said adduct to decompose the same with evolution of the isocyanate.

4,285,877

DI(2-METHYL-2-PHENYL PROPYL) PEROXY DICARBONATE AND OTHER NOVEL (2-ALKYL-2-PHENYL) SUBSTITUTED PEROXY DICARBONATES

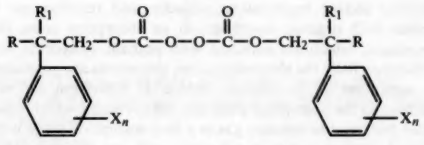
Reidar Halle, Novato; David Peterson, Hercules, both of Calif.; Michael A. Fisch, Wayne, and Koei-Liang Liauw, Wyckoff, both of N.J., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Jan. 17, 1980, Ser. No. 112,872

Int. Cl.³ C07C *179/14*

U.S. Cl. 260—453 RZ **9 Claims**

1. A peroxydicarbonate having the formula:



wherein:

each of R and R_1 is lower alkyl of from 1 to 4 carbon atoms;

n is 0 to 3; and

X is selected from the group consisting of lower alkyl of from 1 to 4 carbon atoms, halogen, and lower alkoxy of from 1 to 4 carbon atoms.

4,285,878

N-PHENYL-N′-CYANO-O-PHENYLISOUREAS

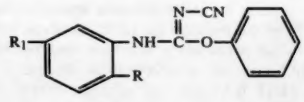
Clifford S. Labaw, Philadelphia, and Robert L. Webb, West Chester, both of Pa., assignors to SmithKline Corporation, Philadephia, Pa.

Filed Jan. 31, 1980, Ser. No. 117,158

Int. Cl.³ C07C *119/20*

U.S. Cl. 260—453.7 **7 Claims**

1. A compound of the formula:



in which R is amino or hydroxy and R_1 is hydrogen, acetyl, halo, lower alkyl, lower alkoxy, lower alkylthio, lower alkyl sulfinyl, phenylthio, phenyloxy, phenylsulfinyl, cyclohexylthio, cyclohexyloxy, cyclohexylsulfinyl or thienylcarbonyl, said lower alkyl and lower alkoxy groups having 1–6 carbons.

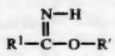
4,285,879

CYCLOPROPYL AND PHENYLISOBUTYLIMIDATES

Gustave K. Kohn, and Ted A. Baer, both of Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 102,050, Dec. 10, 1979, Pat. No. 4,254,264.
This application May 22, 1980, Ser. No. 152,258
Int. Cl.³ C07C *119/18*
U.S. Cl. 260—453.7 **7 Claims**

1. A compound of the following formula:

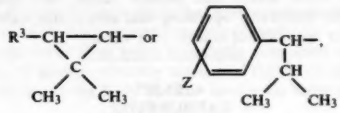


(IV)

wherein,

R′ is lower alkyl; and

R^1 is



where

R^3 is lower haloalkyl, lower alkenyl, or lower haloalkenyl; and Z is hydrogen, lower alkyl, lower fluoroalkyl, lower alkoxy, lower fluoroalkoxy, lower alkylthio, lower fluoroalkylthio, lower alkylcarbonyl, lower alkoxycarbonyl, C_3–C_8 cycloalkyl, or halogen.

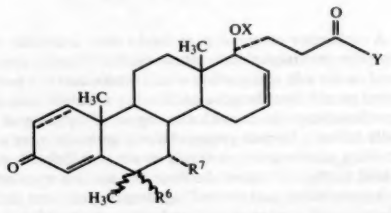
4,285,880

D-HOMOPREGNANES

Andor Fürst, Basel; Peter Keller, Reinach, and Marcel Müller, Frenkendorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 921,036, Jun. 30, 1978, Pat. No. 4,202,823.
This application Oct. 5, 1979, Ser. No. 82,269
Claims priority, application Luxembourg, Jul. 6, 1977, 77699
Int. Cl.³ C07J *63/00*
U.S. Cl. 260—455 R **1 Claim**

1. A D-homopregnane of the formula



wherein X is hydrogen and Y is hydroxy; R^6 is hydrogen; R^7 is lower alkanoylthio or aroylthio; and the dotted line in the 1,2-position of the A-ring together with the corresponding solid line denotes a single or double carbon to carbon bond, or a pharmaceutically-acceptable basic addition salt thereof.

4,285,881

DIOXANE REMOVAL FROM ETHER SULFATE

Kang Yang, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Apr. 7, 1980, Ser. No. 138,052
Int. Cl.³ C07C *141/02*
U.S. Cl. 260—458 R **6 Claims**

1. A method for removal of dioxane from ether sulfates comprising contacting ether sulfates/dioxane mixtures with dioxane-free water vapor at temperatures of from about 25° C. to about 150° C.

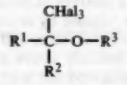
4,285,882

TRIHALOCYCLOPROPYL CARBONATES

Petrus A. Kramer, Amsterdam, Netherlands, and Pieter A. Verbrugge, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 25, 1980, Ser. No. 133,773
Claims priority, application United Kingdom, Mar. 27, 1979, 10661/79
Int. Cl.³ C07C *69/96*
U.S. Cl. 260—463 **11 Claims**

1. A compound of the formula I



wherein R^1 represents a 2-(2,2-dimethoxyethyl)-3,3-dimethylcyclopropyl group, a 2-hydroxycarbonyl-3,3-dimethylcyclopropyl group, a [2,2-dimethyl-3-(2-oxopropyl)cyclopropyl]-methyl group or a 2-alkoxycarbonyl-3,3-dimethylcyclopropyl group in which the alkoxy substituent has fewer than five carbon atoms; R^2 represents a hydrogen atom; each Hal represents a chlorine or bromine atom; and R^3 represents (i) a group —C(O)OM in which M represents an alkali metal atom or (ii) a group —C(O)OR⁴ in which R^4 represents an alkyl group with fewer than five carbon atoms.

4,285,883

PROCESS FOR PRODUCING 2-CHLORO-6-NITROBENZONITRILE

Hiroshi Yoshikawa, Fujioka, Japan, assignor to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1980, Ser. No. 120,396
Claims priority, application Japan, Mar. 9, 1979, 54-26634
Int. Cl.³ C07C *121/52*
U.S. Cl. 260—465 G **7 Claims**

1. A method of producing 2-chloro-6-nitrobenzonitrile which comprises contacting 2,3-dichloronitrobenzene with an alkali cyanide in an aprotic or basic solvent in the presence of (a) cuprous chloride; and a cupric salt selected from the group consisting of cupric sulfate, cupric nitrate, cupric chloride and cupric acetate.

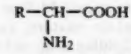
4,285,884

PROCESS FOR RESOLUTION OF RACEMIC DL-α-AMINOCARBOXYLIC ACIDS

Wolfgang Dannenberg, Wunstorf, and Horst Schmand, Bad Nenndorf, both of Fed. Rep. of Germany, assignors to Riedel-de Haen Aktiengesellschaft, Seelze, Fed. Rep. of Germany

Filed Nov. 1, 1978, Ser. No. 956,450
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1977, 2749203
Int. Cl.³ C07C *101/04, 101/06, 101/08;* C07B *19/00*
U.S. Cl. 260—501.11 **23 Claims**

1. A process for resolving a racemic DL-α-aminocarboxylic acid of the formula

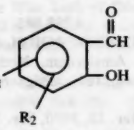


in which

R is isopropyl, phenyl, p-hydroxyphenyl or benzyl, which comprises

(a) in a medium selected from the group consisting of inert solvents and mixtures thereof, reacting said DL-α-

aminocarboxylic acid with an aromatic aldehyde of the formula

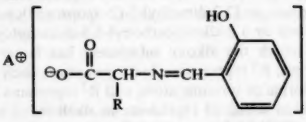


in which R_1 and R_2, which are identical or different, each is hydrogen or halogen, to form an azomethine derivative and in the same reaction stage reacting the azomethine derivative with an optically active tertiary amine having a dissociation constant of from 10^{-9} to 10^{-12} to form a mixture of diastereomeric salts;

(b) separating the mixture by crystallization into its component diastereomeric salts; and

(c) liberating an optically active α-aminocarboxylic acid by treating a separated salt with a strong acid.

15. A compound of the formula



in which $A^{\oplus}$ is a cation formed by addition of a proton to the nitrogen atom of an optically active tertiary amine having a dissociation constant of from 10^{-9} to 10^{-12}, and in which R is isopropyl, p-hydroxyphenyl or benzyl.

4,285,885

NOVEL DISTYRYLBENZENE CONTAINING SULFONIC ACID GROUPS

Kurt Weber, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

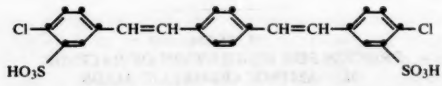
Filed Jan. 7, 1980, Ser. No. 110,274

Claims priority, application Switzerland, Jan. 17, 1979, 439/79

Int. Cl.³ C07C *143/24*; D06P *1/38*; C09K *11/06*

U.S. Cl. 260—505 R **3 Claims**

1. The bis-styrylbenzene of the formula



and the alkali metal, alkaline earth metal, ammonium and amine salts thereof.

4,285,886

CARBURETOR

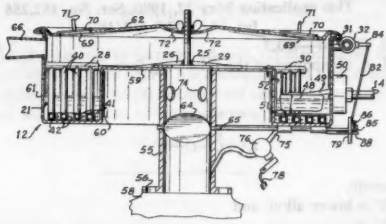
Anthony T. Delfino, 2155 Bedevere Cir., #F, Decatur, Ga. 30035

Filed May 15, 1980, Ser. No. 150,185

Int. Cl.³ F02M *21/04*

U.S. Cl. 261—30 **10 Claims**

1. A carburetor device, for use with an internal combustion engine having an intake manifold from which at least one cylinder receives a fuel-air mixture, said carburetor device comprising a well for holding a quantity of liquid fuel, level control means for maintaining a predetermined level of liquid fuel within said well, a first plurality of tube means beneath said predetermined level of liquid fuel in a first portion of said well, a second plurality of tube means beneath said predetermined level of liquid fuel in a second portion of said well, a source of air pressure connected to both said first plurality of tube means and said second plurality of tube means, accelerator valve means between said source of air under pressure and said second plurality of tube means, passage means through



which said well communicates with said intake manifold, a throttle valve within said passage means, and connecting means for selectively operating said accelerator valve in response to operation of said throttle valve.

4,285,887

CARBURETOR

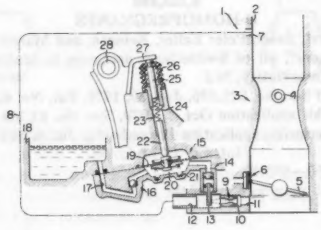
Kiyoshi Akiya, Ageo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 113,041

Claims priority, application Japan, Jan. 29, 1979, 54-9396; Oct. 6, 1979, 54-129336

Int. Cl.³ F02M *7/08*

U.S. Cl. 261—34 A **7 Claims**



1. A carburetor comprising: an intake duct; a throttle valve disposed in said intake duct; a low speed fuel spray aperture defined on the side wall portion of said intake duct at a position opposed to said throttle valve and feeding a fuel for low speed operation in accordance with the degree of opening of said throttle valve; a by-pass passage having an intake port and a controlling stream spray port; said intake port defined on the side wall portion of said intake duct at a position upstream of said throttle valve; said controlling stream spray port defined on the side wall portion of said intake duct at a position downstream of said throttle valve; a controlling nozzle disposed in said by-pass passage and generating a jet stream towards said controlling stream spray port and means spraying fuel during acceleration into said by-pass passage upstream of said controlling nozzle.

4,285,888

CARBURETOR FOR INTERNAL COMBUSTION ENGINES

George Sahnas, 4126 N. Austin Ave., Chicago, Ill. 60634

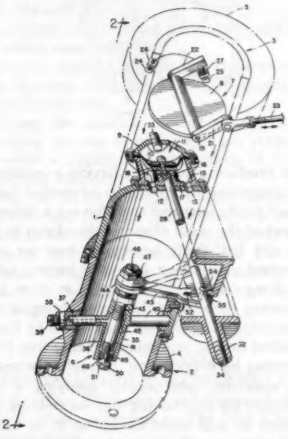
Filed Dec. 20, 1979, Ser. No. 105,605

Int. Cl.³ F02M *7/14*

U.S. Cl. 261—59 **6 Claims**

1. A carburetor for internal combustion engines having a fuel pump and an intake manifold comprising

(a) an elongate main housing having
(1) a first end adapted to be connected to the intake manifold of the engine, and
(2) a second end adapted to be connected to a source of air,
(b) fuel valve means in said housing adjacent said first end thereof including
(3) a tubular body member axially disposed within said housing and containing a longitudinal bore adapted to receive fuel under pressure from the fuel pump,
(4) a valve seat on the end of said body member adjacent to and facing said first end of the housing,
(5) a valve stem within the bore of said body member having a peripheral portion spaced from the surrounding inner wall of the bore to provide an annular passageway around the valve stem which connects to the fuel pump,
(6) a valve member mounted on said valve stem providing an annular space between the valve member and the valve seat through which fuel passes to the intake manifold from said annular passageway, and
(7) the valve stem being threadedly connected with the body member whereby rotation of the valve stem with respect to the body member moves the valve member



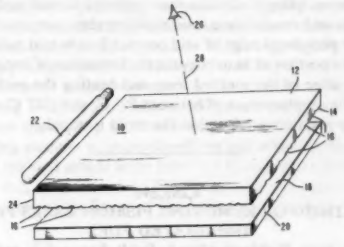
axially of the body member to change the spacing of the valve member from the valve seat,
(c) air valve means in said housing adjacent the second end thereof movable between an engine idle position for minimum air passage therethrough and an engine full-throttle position for maximum air passage therethrough,
(d) means for controlling the fuel valve means including
(8) a diaphragm movable between engine idle and engine full-throttle positions, having one side communicating with atmosphere and its opposed side communicating with the interior of the housing between the air valve means and the fuel valve means so as to be movable between said positions in response to a change of air volume admitted by the air valve means into the housing, and
(9) means operably connecting said diaphragm with said valve stem whereby movement of said diaphragm rotates said valve stem on its threaded connection to the fuel valve body member in response to a change in volume of air flow through the housing such that the air supply to the intake manifold of the engine increases as the fuel supply thereto is increased, and
(e) means to move said air valve means between the engine idle and the engine full-throttle positions thereof.

4,285,889

METHOD FOR FABRICATING THIN PANEL ILLUMINATOR

J. Howard Parsons, La Mirada, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1979, Ser. No. 106,951
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—2.6 **6 Claims**



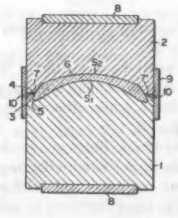
1. A process for fabricating a direction-selective light-diffusing surface on an end-lit transparent substrate comprising the steps of:
(a) roughening one major surface of an optically transparent substrate having two parallel opposing major surfaces, thereby forming relatively steep-sided depressions on said surface;
(b) partially filling said relatively steep-sided depressions with an optically transparent liquid that forms within each of said depressions a concave meniscus having its lip flush with said roughened major surface, said liquid having a surface tension selected so as to cause the meniscuses to assume a relatively shallow slope angle to said roughened surface and an index of refraction selected to closely match that of said substrate; and
(c) solidifying said optically transparent liquid within said depressions so that the meniscuses retain their shallow slope angle, thereby creating a new optical surface by permanently altering the initially rough surface of said substrate.

4,285,890

METHOD FOR MANUFACTURING SILICONE CONTACT LENSES

Yutaka Mizutani, Nagoya; Yoshiharu Miwa, Gifu, and Mitsuru Oshima, Obu, all of Japan, assignors to Nippon Contact Lens Manufacturing Ltd., Nagoya, Japan

Division of Ser. No. 808,857, Jun. 22, 1977, Pat. No. 4,138,086.
This application Oct. 10, 1978, Ser. No. 949,475
Claims priority, application Japan, Apr. 28, 1977, 52/48397
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.1 **1 Claim**



1. A method of manufacturing silicone contact lenses comprising the steps of: utilizing a metallic mold having a male section with a convex mold surface and a female section with

a concave mold surface, said convex and concave mold surfaces being plated with a metal selected from hard chromium and nickel, said convex mold surface having a radial outer concave portion terminating in a first circumscribing edge and said concave mold surface terminating in a radial second circumscribing edge; mating said male and female sections along said first and second circumscribing edges with line contact to thereby provide a mold cavity between said male and female sections; molding a silicone resin material in said mold cavity to form said contact lens, said molding step comprising molding the peripheral edge of said contact lens in said radial outer concave portion so as to prevent the formation of irregularities on the edge of the molded lens; and heating the mold in hot water to a temperature of between 80° C. and 100° C. until the silicone resin material within the mold is cured.

4,285,891

METHOD OF REMOVING FISSION GASES FROM IRRADIATED FUEL

Lane A. Bray, Richland; Allyn L. Boldt, Kennewick, and Harold H. Van Tuyl, Richland, all of Wash., assignors to Exxon Nuclear, Inc., Bellevue, Wash.

Filed Dec. 31, 1979, Ser. No. 108,376
Int. Cl.³ G21C *21/00*
U.S. Cl. 264—0.5 **11 Claims**

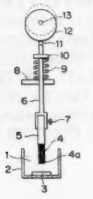
1. A method for removing volatile fission products from irradiated fuel which comprises (a) passing hydrogen in the presence of an inert gas by said fuel which is heated to a temperature of at least about 1000° C. for a sufficient time to remove a significant portion of said fission products and (b) passing an inert gas alone by said fuel while at said elevated temperature.

4,285,892

PROCESS FOR TAPERING SYNTHETIC FIBERS AT THE END PORTION THEREOF

Yasuhiro Betsuda, Fujisawa; Yoshio Taguchi, Chibi, and Yasuo Takashashi, Chigasaki, all of Japan, assignors to Shinwa Seisakusho Co., Ltd., Kanagawa, Japan

Filed Feb. 22, 1980, Ser. No. 123,617
Claims priority, application Japan, Mar. 1, 1979, 23619/79
Int. Cl.³ B06B *3/00*
U.S. Cl. 264—23 **21 Claims**



1. A process for tapering synthetic fibers at the end portion comprising the steps of:

inserting the end portions of synthetic fibers at a predetermined velocity into an etching liquid capable of etching or dissolving the fibers while effecting supersonic vibration to the etching liquid,

withdrawing the synthetic fibers at a predetermined velocity from the etching liquid while effecting supersonic vibration thereto, the insertion and withdrawal being alternately repeated to taper the fibers at said end portions, and then

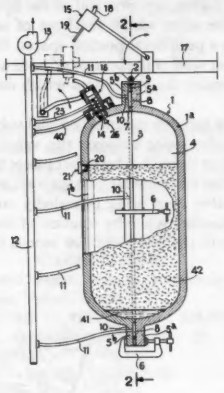
immersing the thus tapered synthetic fibers in a washing liquid while effecting supersonic vibration thereto to wash said tapered fibers.

4,285,893

METHOD AND DEVICE FOR FORMING PLASTIC CELLULAR MATERIAL IN A MOLD FROM A FOAMABLE LIQUID REACTION MIXTURE

Andre Contastin, Severac-le-Chateau, France, assignor to Industries et Techniques d'Ameublement, Severac-le-Chateau, France

Filed Jun. 4, 1979, Ser. No. 44,490
Claims priority, application France, Jun. 13, 1978, 78 18325
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—54 **15 Claims**



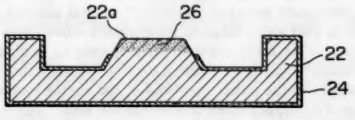
1. Method for producing an object having a cellular structure in a mold, comprising two pivotally connected half-shells having a common joint plane and each having a shape corresponding to a part of the outer shape of the object to be produced, one of said half-shells having at least an aperture therein, said method comprising pivotally joining said half-shells together along said joint plane so as to form a closed mold cavity, pouring through said aperture a liquid mixture which is the precursor of a polymer material to be foamed to produce the finished object, said mixture being free from any blowing agent acting by evaporation, thereafter momentarily obturating said aperture, subsequently applying a vacuum through said aperture for establishing and maintaining a subatmospheric pressure in said mold cavity so as to allow the expansion of said mixture, said vacuum being maintained from the time of obturation until the foamed mixture is polymerized, releasing the vacuum from the mold and stripping the object from the mold.

4,285,894

MN-ZN SINGLE CRYSTALLINE FERRITE HEAD AND A METHOD OF MAKING THE SAME

Hisashi Watanabe, Yokohama; Yoshiteru Urino, Tokyo, and Shinichi Aotsu, Urawa, all of Japan, assignors to Akai Electric Company Limited, Tokyo, Japan

Filed Mar. 8, 1979, Ser. No. 18,768
Claims priority, application Japan, Mar. 13, 1978, 53-28873
Int. Cl.³ C04B *35/36*
U.S. Cl. 264—61 **5 Claims**



1. A method of making a magnetic head for magnetic tape

recording and reproducing apparatus, said magnetic head including at least one head core, at least a part of which, where an air gap is formed, is made of Sn substituted Mn-Zn single crystalline ferrites, which comprises:

disposing a coating over whole surfaces of an Sn substituted Mn-Zn single crystalline ferrite head core block, from which said part is made, except for a region where said air gap is to be formed, said coating masking said whole surfaces so as to prevent the formation of SnO_2 when the head core block is treated at 1,100° C.–1,200° C. under an atmosphere with an oxygen density of less than 3%; and

treating said ferrite head core block at 1,100° C.–1,200° C. under an atmosphere with an oxygen density of less than 3% so that SnO_2 is precipitated substantially only at said region where said air gap is to be formed.

4,285,895

METHOD OF DENSIFYING A REACTION BONDED SILICON NITRIDE ARTICLE

John A. Mangels, Flat Rock, and Gerald J. Tennenhouse, Oak Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 23,426, Mar. 23, 1979, abandoned. This application Sep. 24, 1979, Ser. No. 78,129

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—65 **11 Claims**

1. A method of densifying a reaction bonded silicon nitride article which comprises:

packing the reaction bonded silicon nitride article in a packing mixture consisting of silicon nitride powder and a densification aid;

subjecting the reaction bonded silicon nitride article and packing mixture to a nitrogen gas pressure sufficient to prohibit a significant volatilization of silicon nitride at a sintering temperature; and

heating the reaction bonded silicon nitride article, packing mixture and nitrogen gas present to a sintering temperature above 1700° C. for a time sufficient to permit migration of said densification aid into the reaction bonded silicon nitride article and a sintering of that article whereby the strength of the reaction bonded silicon nitride article is increased.

4,285,896

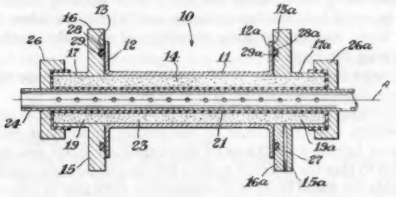
ISOSTATIC MOLDING PROCESS AND SEAL

Arnold B. Miller, Pinconning, and Herman F. Casper, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 6, 1977, Ser. No. 803,923

Int. Cl.³ B29C *3/00*

U.S. Cl. 264—127 **4 Claims**



1. In a process for the isostatic forming of plastic liners within hollow bodies having generally flat-faced flanges disposed about openings thereof, the method comprising providing a flanged hollow body to be lined, the body having at least one generally flat-faced flange, the flange having a generally radially extending planar surface and a centrally disposed opening therein, disposing within the body a powder to be compacted to form a lining, disposing a flexible membrane within the body and the powder to be compacted, the flexible membrane maintaining the powder in a desired position, supporting and sealing the membrane adjacent the flanged opening of the article with a flanged end cap, hydraulically sealing the flexible member to said end cap and subsequently immersing the body in a hydraulic liquid and applying pressure thereto sufficient to compact the powder to a desired degree, subsequently removing the end cap and flexible member to provide a compacted-powder lined body, the improvement which comprises providing an end cap having an annular recess formed in a mating surface thereof, the recess having a radial cross-sectional configuration which is generally rectangular, disposing a generally resilient liquid impervious annular sealing member within said groove, the annular sealing member having a radial, generally rectangular configuration such that when the sealing member is disposed within the groove, the sealing member projects therefrom and when the flanges of the end cap and article to be lined are forced into contact, the sealing ring is deformed to fill the groove and any adjacent irregularities in the flange of the body to be lined.

4,285,897

WATER-BASED ANTI-BLEMISH PAINT

Moneeb Zakaria, LaGrange, and Manuel Slovinsky, Woodridge, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Division of Ser. No. 2,484, Jan. 11, 1979, Pat. No. 4,253,994, which is a continuation-in-part of Ser. No. 894,779, Apr. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 732,260, Oct. 14, 1976, abandoned. This application Jun. 2, 1980, Ser. No. 155,904

Int. Cl.³ B29H *21/04, 5/02;* C08L *9/10*

U.S. Cl. 264—130 **3 Claims**

1. A method for preventing blemishes formed during the manufacture of tires which comprises coating the outside of tires prior to shaping and curing with a thin coating of an anti-blemish paint composition which comprises:

Ingredients	% By Weight
Water	65–85
Surfactant	0.1–2
Carbon black	10–25
Particulate lubricant	1–8
Aqueous latex containing 15–80% by weight of particles selected from the group consisting of natural rubber, synthetic rubber and mixtures thereof	2–10

4,285,898

PROCESS FOR THE MANUFACTURE OF MONOFILAMENTS

Hans-Joachim Hoppe, Obernburg, and Karl Ostertag, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Sep. 21, 1979, Ser. No. 77,839

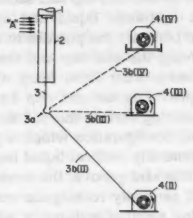
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2840988

Int. Cl.³ D01D *5/00*

U.S. Cl. 264—176 F **8 Claims**

1. A process for manufacturing a monofilament yarn selected from the group of synthetic polymers consisting of polyamides, polyesters and polyolefins, comprising the steps of melt spinning a polymer substantially vertically downward into a cooling gaseous atmosphere to form a monofilament,

inducing a natural yarn deflection into the downward path of the monofilament and thereafter drawing the monofilament to



a winding device laterally displaced from the spinning point at a speed of at least 2,750 meters per minute.

4,285,899

METHOD AND APPARATUS FOR MAKING HELICAL PLASTIC MEMBERS, AND THE MEMBERS PRODUCED

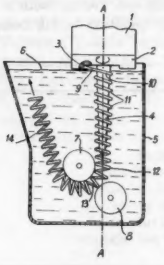
Michel Pavy, Wattignies, and Rene Casaert, Lille, both of France, assignors to Nortene, Lille, France

Filed May 9, 1979, Ser. No. 37,934

Claims priority, application France, May 17, 1978, 78 14586

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—180 **10 Claims**



1. A method of making a plastic material helical member comprising the steps of, continuously extruding into a liquid, hot plastic material generally horizontally from an extrusion orifice located near the surface of the liquid, while simultaneously rotating the extrusion orifice relative to the liquid about a generally vertical axis spaced from the extrusion orifice to form a helical plastic material shape about said axis, causing said helical shape to stabilize in the liquid, and removing the so formed helical member from the liquid.

9. Apparatus for forming a helical plastic member comprising an extruder having an extrusion orifice rotatable about a generally vertical axis spaced from the orifice while plastic material is extruded through the orifice; means to rotate said orifice; a tank containing liquid below the extrusion orifice; said extrusion orifice comprising means for extruding the plastic material generally horizontally about said axis and into said liquid while said orifice is rotating, to form a helical plastic shape, and means in said tank for extracting the helical shaped member.

4,285,900

PROCESS FOR MANUFACTURING MODACRYLIC FIBERS HAVING HIGH LUSTER, THERMAL STABILITY AND FLAME RESISTANCE

Giorgio Cazzaro, Saronno; Antonino Cavallaro, Cesano Maderno; Antonio Salan, Saronno, and Giancarlo Matera, Monza, all of Italy, assignors to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Feb. 27, 1980, Ser. No. 125,236

Claims priority, application Italy, Mar. 9, 1979, 20850 A/79

Int. Cl.³ D01F *6/18*

U.S. Cl. 264—182 **6 Claims**

1. A method of preparing flame-resisting modacrylic fibers containing pentavalent antimony oxide, characterized in that the antimony oxide is suspended in a mixture of water and an organic solvent selected from dimethylformamide and dimethylacetamide wherein the percent by weight of water in the suspension ranges from 20% to 40%, and that the suspension is then mixed with the viscose solution of modacrylic polymeric material to be spun.

4,285,901

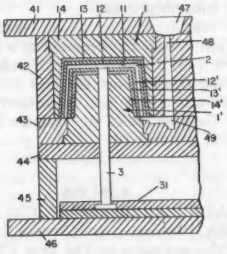
METHOD OF MAKING AN INSULATED METAL MOLD

Akira Yotsutsuji, 462-37, 6-chome, Isokabe, Kashiba-cho, Kitakatsuragi-gun, Nara-ken; Seiichi Ueda, 20-2, Daianji, Tawaramoto-cho, Shiki-gun, Nara-ken, and Hiroyuki Iwami, 29-20, Nagisahigashi-machi, Hirakata-shi, Osaka-fu, all of Japan

Division of Ser. No. 922,310, Jul. 6, 1978, Pat. No. 4,225,109. This application Jun. 27, 1979, Ser. No. 52,824

Int. Cl.³ B29C *1/02*

U.S. Cl. 264—225 **17 Claims**



1. A method of making an insulated metal mold comprising a molding surface defining the cavity of a mold for high pressure injection molding thermoplastic resin and having a metal layer providing the molding surface, a metal backing member, and a layer of heat-insulating means sandwiched between the metal layer and the backing member, wherein the method comprising the steps of:

(1) preparing a master mold conforming to the shape of a specified portion of the article to be molded,

(2) forming a thin metal layer over the master mold in conformity with the shape of the master mold; said metal layer having a thickness of approximately 0.001 mm to 3 mm so that the injected molten thermoplastic resin rapidly heats the metal layer to a temperature sufficient to prevent a solid layer from being formed by the injected molten thermoplastic resin on the cavity surface,

(3) forming a layer of heat-insulating means over the thin metal layer; said heat-insulating means comprising a thermosetting resin composition and controlling heat transmission from the metal layer to the backing member so that when the metal layer is heated to a selected temperature, the selected temperature is first maintained for a sufficient period of time to prevent a solid layer from being formed on the cavity surface by the injected molten resin during injection of the molten thermoplastic resin

into the cavity, after which the metal layer cools to a temperature sufficiently to solidify the molten thermoplastic resin within a predetermined time after filling the mold cavity therewith, and said heat-insulating means also comprising at least one member selected from the group consisting of inorganic filler, metal powder filler, and fibrous filler; the inorganic filler consisting of a powder of at least one material selected from the group consisting of glass, silica, calcium carbonate, talc, clay and alumina, the metal powder filler consisting of a powder of at least one metal selected from the group consisting of aluminum, aluminum alloy, copper and copper alloy; and the fibrous filler consisting of at least one material selected from the group consisting of glass fiber, carbon fiber, asbestos fiber and whisker,

(4) forming a backing member over the heat-insulating layer, and

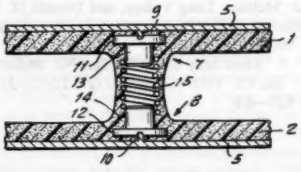
(5) removing the master mold from the thin metal layer after forming the backing member.

4,285,902

METHOD OF MOLDING A RE-ENFORCED ARTICLE

Joseph Braverman, Jerusalem, Israel, assignor to Rotoplas Ltd., Israel

Filed Nov. 30, 1978, Ser. No. 965,142
Claims priority, application Israel, Dec. 5, 1977, 53548
Int. Cl.³ B29D 3/02; B28C 5/04
U.S. Cl. 264—229 **7 Claims**



1. A method of molding an article having a pair of spaced walls in a mold formed by a pair of spaced mold walls, wherein the molded article is strengthened and is able to compensate for shrinkage deformation, comprising the steps:

(a) releasably attaching a first member to one mold wall;

(b) releasably attaching a second member to the other mold wall in alignment with but spaced from the first member;

(c) connecting the two spaced members together by yielding means including a coil spring;

(d) while the first and second members are releasably attached to their respective mold walls and the yielding means is connecting them, introducing molding material between the two mold walls so as to form the article with the two members and the yielding means embedded in the molding material,

(e) then releasing the two members from their respective releasable attachments to the mold walls;

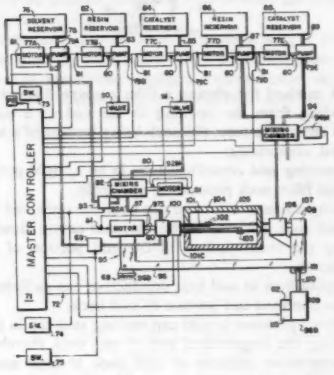
whereby, as the molded article solidifies, it is freed from the mold walls to deform as it shrinks and the yielding means yields to accommodate subsequent shrinkage deformation of the article while the embedded inserts and yielding means help strengthen the molded article.

4,285,903

MOLDING SYSTEM

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 828,747, Aug. 29, 1977, abandoned, which is a continuation of Ser. No. 645,628, Dec. 31, 1975, abandoned, which is a continuation-in-part of Ser. No. 547,621, Feb. 6, 1975, Pat. No. 4,043,721, which is a continuation of Ser. No. 300,248, Jan. 24, 1972, Pat. No. 3,875,275, which is a continuation of Ser. No. 744,048, Jul. 11, 1968, abandoned. This application Jan. 3, 1980, Ser. No. 109,188
Int. Cl.³ B29C 5/04
U.S. Cl. 264—310 **14 Claims**



1. A method of molding large articles of manufacture comprising:

supporting a closed cavity rotational casting mold for simultaneous movement about a plurality of axes,

providing a plurality of streams of fluent molding material from respective reservoirs thereof located at fixed locations next to said mold,

power driving said closed mold to cause it to execute controlled simultaneous movement about said plurality of axes,

simultaneously flowing said plurality of streams of fluent molding material to respective different portions of the cavity of said mold while the mold is in multi-axis motion so as to distribute respective materials from said separate streams about different portions of said mold and to cause such materials to unite and to predeterminately occupy said mold cavity as an integral body of molding material,

solidifying the materials disposed in said different portions of said mold cavity to form a unitary article of the material flowed to said different portions of the cavity of said mold while the mold is in multi-axis movement.

10. A method of molding comprising:

simultaneously generating first and second streams of different molding materials,

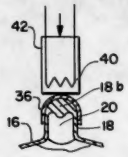
controlling the flow of said molding materials through separate passageways to respective inlets to the cavity of a mold to cause each molding material to occupy a different portion of the mold cavity and

when predetermined quantities of each molding material have been delivered to respective portions of the mold through its inlet, terminating the flow of molding material through its passageway and causing the molding materials in the mold to solidify and to form a unitary article composed of respective portions formed of said different molding materials flows in said first and second streams.

4,285,904
METHOD AND APPARATUS FOR SEALING CENTRIFUGE TUBES

Kenzo Ishimaru, San Jose, and Thomas D. Sharples, Atherton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 5, 1978, Ser. No. 912,696
Int. Cl.³ B29C *24/00*
U.S. Cl. 264—322 **19 Claims**



1. A method for closing a filler passage formed in a neck protruding from the opening in the end of a substantially closed centrifuge tube, the neck being formed of a heat fusible material, comprising:

supporting said centrifuge tube in an upright position with said filler neck protruding upwardly;

placing a heat conductive cap over the open end portion of said neck, said cap having an inner cavity closely confining the outer surface of the end portion of said neck therein;

applying heat to said heat conductive cap sufficient to melt the confined end portion of said neck;

applying pressure to said cap moving said cap in a direction along the longitudinal axis of said neck thereby causing progressive portions of said neck to melt and fold inwardly into the filler passage therein;

removing said heat and pressure from said cap so that said cap cools and the melted material in said filler passage of said neck solidifies therein completely closing said filler passage; and

removing said cap from said neck.

11. Apparatus for closing a passage formed in a filler neck protruding from the opening in the end of a substantially closed centrifuge tube after said tube has been filled with sample, the neck being formed of a heat fusible material, comprising:

means adapted to engage the outer surface of said centrifuge tube for supporting said centrifuge tube in an upright position with said filler neck protruding upwardly;

a cap formed of a high heat conductivity material having a cavity adapted to closely fit the circumference of said filler neck, said cap adapted to be positioned over the end portion of said filler neck to confine said end portion of said neck within said cavity;

means for applying heat to said cap member for raising the temperature thereof to the fusion temperature of said material forming said neck;

pressure applying means movable upwardly and downwardly in a direction subsantially along the axis of said filler passage, said pressure applying means adapted to apply pressure downwardly against said cap so that, when said cap is heated to the fusion temperature of said neck, progressive portions of said neck melt and said cap is forced downwardly so that the sidewalls of said filler neck fold inwardly into said filler passage and form a molten mass closing said filler passage;

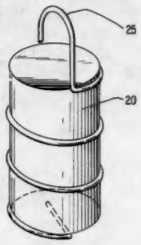
clamping means adapted to grasp said neck at some predetermined position above the upper end of said centrifuge tube to maintain said neck in a substantially upright position as pressure and heat are applied to said cap; and

means for retracting said pressure applying means and interrupting said heat applying means thereby permitting said cap to cool and said molten mass to solidify within the filler passage of said neck of said centrifuge tube.

4,285,905
METHOD AND ARTICLE FOR DISPERSING A VOLATILIZABLE COMPOUND IN AN ENVIRONMENT

Richard Feit, Avant, Inc., 633 Skokie Blvd., Northbrook, Ill. 60062

Filed Oct. 10, 1980, Ser. No. 195,823
Int. Cl.³ A61L *9/01, 9/02, 9/04*
U.S. Cl. 422—4 **38 Claims**



1. A solid unitary article for dispersing a volatilizable compound consisting essentially of

from about 25 to 30 wt. % initially particulate calcium sulfate having a loose bulk density of from about 0.85 to 0.95 gm/cm³;

about 25 to 30 wt. % initially particulate calcium sulfate having a loose bulk density of from about 0.70 to 0.75 gm/cm³;

about 2 to 4 wt. % initially particulate hydrous calcium sulfate having a loose bulk density of from about 0.75 to 0.85 gm/cm³;

about 0.5 to 1 wt. % emulsifier;

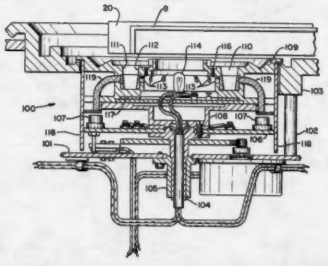
about 6 to 7 wt. % volatilizable compound; and

about 30 to 35 wt. % water.

4,285,906
ROTATABLE DETECTOR

Robert J. Meltzer, Long Valley, and Donald H. Hansen, Convent Station, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 11, 1979, Ser. No. 38,040
Int. Cl.³ G01N *21/82, 21/27, 21/03, 33/86*
U.S. Cl. 422—64 **3 Claims**



1. A rotatable detection unit in an instrument for supporting a cuvette tray having a plurality of samples to be evaluated by the instrument, which comprises a horizontal mount carried by said instrument, a rotatable, hollow shaft extending vertically through said mount, said hollow shaft having an axis, a circular printed circuit board fixed to one end of said shaft and rotatable therewith, a plurality of light detectors spaced equidistant adjacent the periphery of said circuit board, a hollow, metal, receptacle means having an annular groove adapted to receive the cuvette portion of the tray, said annular groove being concentric to said axis, a spacer connecting said receptacle to

said circuit board for rotation therewith, a light source positioned on said axis in a plane passing through said annular groove, a plurality of light passages extending radially in said plane through said receptacle to said annular groove for illuminating a respective plurality of samples, light attenuating means for providing a substantially equal amount of light exiting each of said passages, a plurality of light pipes, each of said plurality of light pipes being adapted to conduct light received from a respective sample to a respective one of said plurality of light detectors and drive means to selectively rotate said shaft.

4,285,907

PIPETTE SYSTEM FOR THE VOLUMETRIC EXTRACTION AND LINEAR DEPOSITION OF A SUSPENDED MATERIAL

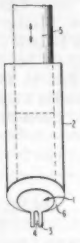
Bernhard Hugemann, Frankfurt am Main, and Guenter von Sengbusch, Koenigstein, both of Fed. Rep. of Germany, assignors to Battelle Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,332

Claims priority, application Fed. Rep. of Germany, Aug. 26, 1978, 2837319

Int. Cl.³ B01L *3/02*

U.S. Cl. 422—100 **10 Claims**



1. Pipette system for the volumetric extraction and linear deposition of a suspended material, in particular cells or particles, said pipette system consisting essentially of a capillary containing a piston inserted therein in such a way as to prevent the passage of liquids, characterized in that a projection is mounted on or is part of the rim forming the orifice of said capillary, said projection only extending partway around the circumference of said rim, said projection not extending past the rim in any manner into the region of said orifice, said projection having a groove extending along the entire length of said projection and reaching right to the tip of said projection, said groove in said projection not extending past the rim into the region of said orifice, the width of said projection determining the width of the deposition regardless of the diameter of said capillary, even when the deposition of the suspension onto a slide or the like does not involve contract with said slide, the inner diameter of said rim of said orifice being equal to the inner diameter of said orifice throughout the rest of the entire capillary region into which the suspended material is drawn, and the end surface of said piston is flat and perpendicular to the axis of movement of said piston.

4,285,908

CATALYST REGENERATION APPARATUS

Gregory J. Thompson, Waukegan, and Anthony G. Vickers, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 908,301, May 22, 1978, Pat. No. 4,197,189. This application Dec. 7, 1979, Ser. No. 101,295

Int. Cl.³ B01J *8/32, 8/44;* **F27B** *15/08, 15/10*

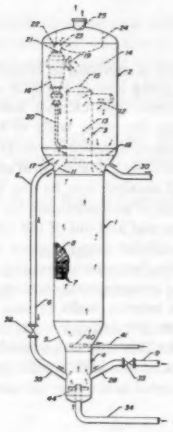
U.S. Cl. 422—143 **1 Claim**

1. A regeneration apparatus for regenerating spent catalyst with a regeneration gas supplied to said apparatus via inlets consisting essentially of a primary and secondary fluidizing gas inlet which comprises a combination of:

(a) a vertical mixer zone having at the lower portion thereof a spent catalyst inlet, a regenerated catalyst inlet and a secondary fluidizing gas inlet for passage of a minor portion of said fluidizing gas, and having at the upper portion thereof an outlet for passage of a mixture of spent and regenerated catalyst;

(b) a relatively dense-phase fluidized bed catalyst chamber having at least twice the diameter of said mixer zone and having at the bottom thereof an inlet means for receiving a mixture of spent and regenerated catalyst, and having a regeneratedcatalyst and spent regeneration gas outlet means at the top portion of said chamber for removal of regenerated catalyst and spent regeneration gas in admixture from said chamber;

(c) a frusto-conical transfer section possessing a primary regeneration gas inlet and a relatively dense-phase fluidized bed in open communication with said mixer zone and said chamber discharging upwardly from said mixer zone



and upwardly into said chamber, said frusto-conical transfer section having the smallest horizontal cross section perimeter adjacent to said mixer zone outlet and wherein said transfer section possesses multiple perforations at the lowermost portion of the same for passage of a major portion of said regeneration gas, thereby constituting said primary gas inlet, located above said spent catalyst, said regenerated catalyst and said fluidizing gas inlets of said mixer zone;

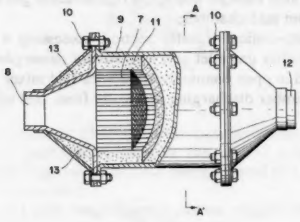
(d) a regenerated catalyst receiving zone in communication with said chamber outlet means, said receiving zone containing a spent-regeneration-gas outlet means for the withdrawal of spent regeneration gas from said regeneration apparatus, an upper regenerated-catalyst outlet means for the withdrawal from said regeneration apparatus of a portion of regenerated catalyst and a regenerated-catalyst recycle conduit connected to said mixer zone by means of said regenerated catalyst inlet for the passage of a portion of said regenerated catalyst from said receiving zone through said conduit and said inlet to said mixer zone.

4,285,909

CATALYST ASSEMBLY FOR CLEANING AN EXHAUST GAS

Shinichiro Mizusawa, Okazaki; Hideaki Akamatsu, Toyota; Fumiyoshi Noda, Toyota, and Yuji Watanabe, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 834,815, Sep. 19, 1977, abandoned, which is a continuation of Ser. No. 360,039, May 14, 1973, abandoned. This application Jun. 18, 1980, Ser. No. 160,630
Claims priority, application Japan, May 13, 1972, 47-47518
Int. Cl.³ B01J *8/02;* **F01N** *3/28, 7/14*
U.S. Cl. 422—179 **8 Claims**



1. An assembly comprising in combination
(a) an outer casing having gas inlet and gas outlet sections,
(b) a honeycomb type catalyst unit mounted within said outer casing, the outer walls of said catalyst unit being located a spaced distance inwardly from the interior walls of said outer casing so as to form an annular space therebetween, said catalyst unit having passageways extending therethrough to accommodate the flow of engine exhaust gas into one end and out of the other,
(c) a cured cellular ceramic mass completely filling said annular space between said casing and said catalyst unit, said cellular ceramic mass exerting both an outward force toward the interior walls of said casing and an inward force against the exterior walls of said catalyst unit by virtue of the fact that an uncured cellular ceramic mass was introduced into said annular space and then expanded in situ and cured in situ after introduction into said annular space.

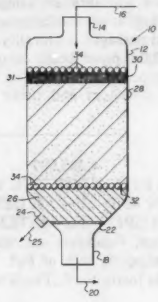
4,285,910

CHEMICAL REACTOR, FLOW DISTRIBUTOR, SYSTEM AND METHOD

Alvin B. Kennedy, Jr., P.O. Box 282, Angleton, Tex. 77515

Filed Oct. 22, 1979, Ser. No. 87,014
Int. Cl.³ B01J *8/02, 19/02, 19/24*
U.S. Cl. 422—219 **17 Claims**

1. A system for inhibiting plugging of fluid reactants flowing through a chemical reactor, comprising:
(a) a bed of catalytic material mounted in said reactor for affecting the rate of chemical change in the incoming fluid reactants;
(b) a bed of chemically inert material mounted in said reactor for supporting said bed of catalytic material;
(c) a layer of chemically inert material covering said bed of catalytic material;
(d) a plurality of chemically inert flow distributors embedded in the receiving surface of said layer of chemically inert material; and
(e) each of said flow distributors being constructed from objects of substantially chemically inert material interconnected to one another for creating voids and interstices which provide passageways therethrough, the passageways permitting the reactants to pass into the bed of catalytic material beneath its receiving surface.

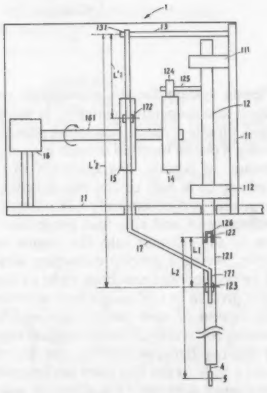


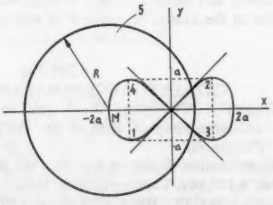
4,285,911

DEVICE FOR GROWING A CRYSTALLINE LAYER ON A SUBSTRATE

Lucien C. De Brouckere, Blankenberge, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 916,335, Jun. 15, 1978, Pat. No. 4,247,360. This application Jun. 16, 1980, Ser. No. 159,535
Claims priority, application Belgium, Jun. 17, 1977, 2/56006
Int. Cl.³ C30B *15/30, 35/00*
U.S. Cl. 422—249 **5 Claims**





1. A device for growing a crystalline layer on a substrate from a liquid medium, said substrate being moved with respect to said liquid medium during layer growth such that the direc-

tion of rotation of said substrate with respect to a fixed point is reversed and causing at least one point of said substrate to move in a loop-shaped path, said device comprising:

a mechanism to impart two substantially rectilinear movements to said substrate to cause said movement thereof including

a slidably mounted bar to which one of said two rectilinear movements is imparted, said bar having a prolonged part hingedly connected thereto, said prolonged part having the other of said two rectilinear movements imparted thereto.

4,285,912

RECOVERY OF BISMUTH FROM CHLORIDE PROCESS SOLUTIONS

Charles M. Flynn, Jr., Reno; Thomas G. Carnahan, Sparks, and Roald E. Lindstrom, Reno, all of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Sep. 11, 1980, Ser. No. 186,090
Int. Cl.³ C01G *29/00*
U.S. Cl. 423—43 **8 Claims**

1. A method for the separation of bismuth from a complex chloride solution having a pH of about 0.5 to 2.5, and obtained by leaching with chloride reagents ores containing bismuth and high concentrations of other metals, said solution comprising over 20 g/l copper, over 20 g/l iron and about 0.3 to 0.5 g/l bismuth, said method comprising adding to said complex chloride solution at least a stoichiometric amount of a precipitating agent selected from the group consisting of hexamminecobalt (III) salts and hexamminechromium (III) salts soluble in said solution to precipitate said bismuth as a hexamminecobalt (III) bismuth salt or a hexamminechromium (III) bismuth salt and separating said precipitate from said solution.

4,285,913

PROCESS OF MAKING MANGANOUS SULPHATE SOLUTION WITH LOW LEVEL IMPURITY OF POTASSIUM FOR MANUFACTURE OF ELECTROLYTIC MANGANESE DIOXIDE

Vasantlal B. Soni, Bombay, and Krishnasami Swaminathan, Calcutta, both of India, assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 25, 1980, Ser. No. 143,632
Int. Cl.³ C01G *45/10*
U.S. Cl. 423—50 **6 Claims**

1. A process for making a manganese sulphate solution with low level impurity of potassium which can be used to make electrolytic manganese dioxide for battery use, from manganese ores containing high potassium impurity which comprises adding reduced manganese ore (MnO) to spent electrolyte containing Mn, H_2SO_4 and water soluble ferric ions till a pH of 1 to 2 is achieved, digesting the mixture at a temperature of at least 60° C. to 90° C. for a period of 1 to 4 hours, and then adding additional reduced manganese ore (MnO) till a pH of 4 to 6 is reached followed by separating the $MnSO_4$ solution obtained from the precipitated material.

4,285,914

RECOVERY OF LITHIUM FROM LOW-GRADE ORES

Charles F. Davidson, Layton, Utah, assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 30, 1980, Ser. No. 116,697
Int. Cl.³ C01D *3/08*
U.S. Cl. 423—179.5 **5 Claims**

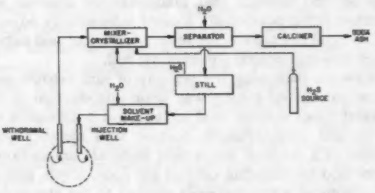
1. A process for recovering lithium from clays comprising (1) admixing the clay with CaO or $CaCO_3$ and (2) reacting the mixture with a chlorinating agent comprising a gaseous H_2O-HCl mixture at a temperature of about 450° to 950° C. for a time sufficient to convert a major amount of the lithium in the clay to water-soluble lithium chloride, and subsequently water leaching said lithium chloride from the clay.

4,285,915

RECOVERY OF ALKALI VALUES FROM TRONA ORE

Jerome Saldick, Princeton, and Bernard Cohen, Trenton, both of N.J., assignors to Intermountain Research and Development Corp., Green River, Wyo.

Filed Apr. 23, 1980, Ser. No. 142,918
Int. Cl.³ C22B *26/10*; C01D *7/00*; F21B *43/28*
U.S. Cl. 423—206 T **19 Claims**



1. A method for recovering alkali values from trona which comprises

(i) contacting the trona with an aqueous solvent containing from about 3 to about 8% by weight sodium sulfide;

(ii) maintaining the solvent in contact with the trona for a period sufficient to solubilize at least a portion of the trona as sodium carbonate whereby sodium sulfide is converted into sodium hydrosulfide;

(iii) separating at least a portion of the resulting solution containing sodium carbonate and sodium hydrosulfide from the trona; and

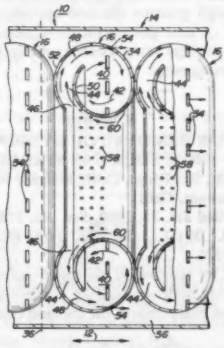
(iv) recovering alkali values from the separated solution.

4,285,916

EXHAUST GAS POLLUTION CONTROL SYSTEM

C. Robert Baisden, 11127 Willow Bottom Dr., Columbia, Md. 21044

Division of Ser. No. 937,787, Aug. 29, 1978. This application Apr. 28, 1980, Ser. No. 144,022
Int. Cl.³ F01N *3/10*
U.S. Cl. 423—212 **7 Claims**



1. An exhaust gas pollution control system for reducing exhaust gas audio levels, particulate and chemical waste materials emitted to the atmosphere subsequent to exhaust gases passing from a combustion chamber, comprising:

(a) a housing element extending in a longitudinal direction having an inlet section for entrance of said gases passing from said combustion chamber;

(b) at least one exhaust gas purification separation element

inserted within said housing element, said exhaust gas purification element forming a generally donut-shaped contour having a central passageway and being of open contour for introduction of said exhaust gases internal said exhaust gas purification element adjacent said central passageway, said exhaust gas purification element defining a predetermined contour wall member having (1) particulate ejection openings formed through said predetermined contour wall member, said particulate ejection openings being positionally located at a substantially maximum radial distance when taken with respect to said central passageway for introduction of said particulate material into said housing element, and, (2) gaseous ejection openings formed through said predetermined contour wall member being positionally located substantially adjacent said central passageway for reintroduction of said exhaust gases into said central passageway; and,

(c) means for increasing the velocity of said exhaust gases from said central passageway upon introduction of said exhaust gases internal said exhaust gas purification element, said predetermined contour wall member being formed of a catalytic conversion material composition.

5. A method for reducing exhaust gas audio levels, particulate and chemical waste materials emitted to the atmosphere subsequent to exhaust gases passing from a combustion chamber, including the steps of:

(a) introducing said exhaust gases into a central passageway of an exhaust gas purification element having an open contour donut shape;

(b) directing a portion of said exhaust gases internal said exhaust gas purification element from said central passageway;

(c) catalytically converting said exhaust gases within said exhaust gas purification element;

(d) circumferentially transporting said exhaust gases within said gas purification element;

(e) increasing the velocity of said portion of said exhaust gases directed into said exhaust gas purification element when taken with respect to a velocity of said exhaust gas within said central passageway;

(f) ejecting particulate matter through particulate ejection openings formed through a wall of said gas purification element, said particulate ejection openings being located at a substantially maximum radial distance when taken with respect to said central passageway; and,

(g) reintroducing a portion of said exhaust gases within said exhaust gas purification element to said central passageway through gaseous ejection openings formed through said wall of said gas purification element, said gaseous ejection openings being located substantially adjacent said central passageway.

4,285,917

METHOD FOR REMOVAL OF HYDROGEN SULFIDE FROM SOUR GAS STREAMS

Stuart R. Knight, San Diego, Calif., assignor to Bayside Holding Corp., Paramount, Calif.

Filed Jul. 31, 1980, Ser. No. 174,193

Int. Cl.[3] **B01D** *53/34;* **F25J** *3/00;* **F01K** *25/14*

U.S. Cl. 423—224 **10 Claims**

1. A method for removal of hydrogen sulfide from a sour gas stream containing hydrogen sulfide, combustible and non-combustible gaseous components, the method comprising the steps of:

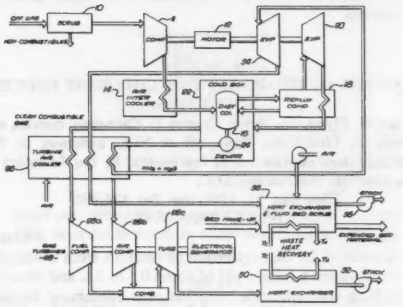
(a) scrubbing a majority of said non-combustible gaseous components from said sour gas stream;

(b) compressing the remainder of said stream derived from step (a) to a pressure within a range of from about 230 psia to about 250 psia;

(c) effecting a separation by cryogenic liquifaction of hydrogen sulfide and gaseous components of similar critical temperature from said stream derived from step (b) and storing the separated hydrogen sulfide and gaseous components of similar critical temperature in an insulated storage vessel;

(d) expanding the unstored remainder of said stream derived from step (c) in an adiabatic manner to substantially recover available work of compression from said stream;

(e) combining the expanded stream derived from step (d) with air and effecting combustion thereon in a combustion unit whereby resultant energy is utilized to drive a gas turbine engine;



(f) flowing the stored hydrogen sulfide and gaseous components of similar critical temperature derived from step (c) through an expander to substantially recover available work of compression; and

(g) combining the expanded hydrogen sulfide and gaseous components of similar critical temperature derived from step (f) with air and effecting combustion thereof in a combustion unit having a fluidized bed scrub, to substantially convert hydrogen sulfide to sulfur dioxide and to scrub said sulfur dioxide from resultant combustion gases.

4,285,918

REGENERATIVE CO_2 ABSORBENT

Paul R. Gustafson, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 25, 1980, Ser. No. 124,204

Int. Cl.[3] **B01D** *53/34*

U.S. Cl. 423—228 **1 Claim**

1. A process for the extraction of CO_2 from the breathing air of a submarine comprising:

creating an effective amount of an aqueous solution of 3-amino-1,2-propanediol;

contacting the exhausted breathing air with the aqueous solution in order to extract CO_2 from the air;

separating the regenerated air from the aqueous solution and the CO_2 gases dissolved therein;

separating the dissolved CO_2 gas constituents from the aqueous solution, thereby producing a regenerated aqueous solution;

reusing the regenerated aqueous solution for the removal of additional CO_2 by continually repeating the above cycle.

4,285,919

METHOD OF PREPARING A METAL-CATION-DEFICIENT CRYSTALLINE BOROSILICATE

Marvin R. Klotz, Batavia, and Stephen R. Ely, West Chicago, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 26, 1978, Ser. No. 973,178

Int. Cl.[3] **C01B** *35/10*

U.S. Cl. 423—277 **10 Claims**

1. A method for preparing a metal-cationdeficient borosilicate, which method comprises: (1) preparing a mixture con-

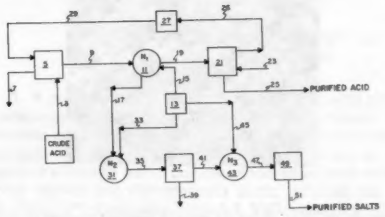
taining an oxide of silicon which is substantially free of metal cations, an oxide of boron, ammonium hydroxide, alkylammonium cation or a precursor of an alkylammonium cation, and water; and (2) maintaining said mixture at suitable reaction conditions to effect formation of said borosilicate, said reaction conditions comprising a reaction temperature within the range of about 25° C. (77° F.) to about 300° C. (572° F.), a pressure of at least the vapor pressure of water at the reaction temperature, and a reaction time that is sufficient to effect crystallization.

4,285,920

SOLVENT EXTRACTION PROCESS FOR PREPARING PURIFIED PHOSPHORIC ACID AND SODIUM PHOSPHATE SALTS

Avtar S. Jassal, Katonah, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Nov. 8, 1979, Ser. No. 92,598
Int. Cl.³ C01B *25/01*
U.S. Cl. 423—305 **9 Claims**



1. A process for concurrently preparing purified phosphoric acid and phosphate salts which comprises the steps of:

(A) extracting crude phosphoric acid with a nonaqueous solvent to give a phosphoric acid enriched organic solvent phase; (B) contacting the phosphoric acid enriched organic solvent phase of step (A) with aqueous neutralizing agent containing alkaline sodium salts selected from the group consisting of sodium carbonate, sodium bicarbonate, sodium sesquicarbonate, sodium hydroxide, or mixtures thereof; wherein the volume ratio of said aqueous neutralizing agent to said organic solvent is from about 1:50 to about 1:300 and the alkaline sodium salt content of said neutralizing agent is an amount effective to convert from about 15% to about 35% of the phosphoric acid in the solvent phase from step (A) to sodium phosphate salts; said contact resulting in (I) a purified organic solvent phase containing a major portion of the phosphoric acid originally present in the solvent phase from step (A), and (II) a partially neutralized aqueous raffinate phase;

(C) reextracting the purified solvent phase of step (B) with water or dilute phosphoric acid to release a purified phosphoric acid product;

(D) neutralizing aqueous raffinate phase of step (B) to a pH in the range of 4 to 6 with an alkaline sodium salt selected from the group consisting of sodium carbonate, sodium bicarbonate, sodium sesquicarbonate, sodium hydroxide, or mixtures thereof in an amount effective to precipitate a major portion of polyvalent cations dissolved in said raffinate;

(E) separating the precipitate formed in step (D) from the aqueous raffinate to give a precipitate-free aqueous raffinate;

(F) neutralizing the precipitate-free aqueous raffinate of step (E) to a pH of at least 8 with sodium hydroxide or sodium hydroxide in combination with an alkaline sodium salt selected from the group consisting of sodium carbonate, sodium bicarbonate or sodium sesquicarbonate to form a purified solution of phosphate salts.

4,285,921

PROCESS FOR PREPARATION OF WET PHOSPHORIC ACID

Armand Mamourian, Ales; Francois Bousquet, Paris, and Jacques Helgorsky, Frepillon, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 923,793, Jul. 12, 1978, abandoned. This application Dec. 28, 1979, Ser. No. 107,845
Claims priority, application France, Jan. 12, 1978, 78 00771
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 S **8 Claims**

1. In a process for the preparation of purified phosphoric acid from wet, raw phosphoric acid containing sulphate and fluoride components said sulphate component for sulphuric acid by contacting the raw phosphoric acid with a substantially water immiscible aliphatic C_4–C_8 alcohol to form an aqueous phase and an organic liquid phase containing extracted phosphoric acid, some sulphate ions and fluorides, separating the organic liquid phase from the aqueous phase, contacting the separated organic phase with an aqueous solution containing calcium ion to precipitate out sulphate ion, as calcium sulphate, containing the remaining organic phase with an aqueous phase whereby phosphoric acid transfers from the organic phase to the aqueous phase with some of the fluoride in the form of HF or SiF_4 thereby to provide an aqueous solution of phosphoric acid substantially free of cationic impurities and partially defluorinated, the improvement in which the aqueous solution is treated with water vapor or hot gas thereby to produce a defluorinated aqueous solution having a ponderal ratio of F/P_2O_5 of less than 10 ppm.

4,285,922

METHOD OF PREPARING CRYSTALLINE ZEOLITE

Costandi A. Audeh, Princeton, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 10, 1979, Ser. No. 73,765
Int. Cl.³ C01B *33/20, 33/28*
U.S. Cl. 423—329 **10 Claims**

1. A method for preparing a synthetic crystalline zeolite material having a constraint index between 1 and 12 and and a SiO_2/Al_2O_3 ratio greater than 15 which comprises preparing a reaction mixture containing a source of an alkali metal oxide, an oxide of silicon, an oxide of aluminum, RNO, and water, and having a composition, in terms of mole ratios of oxides, falling within the following ranges:

$SiO_2/Al_2O_3 = 5$ to ∞
$H_2O/SiO_2 = 5$ to 200
$OH^-/SiO_2 = 0$ to 1.0
$M/SiO_2 = 0.01$ to 3.0
$RNO/SiO_2 = 0.01$ to 2.0

wherein M is an alkali or alkaline earth metal and RNO 1-alkyl, 4-aza, 1-azonia-bicyclo(2,2,2)octane, 4-oxide, halide and maintaining said mixture under crystallization conditions until crystals of said zeolite are formed.

4,285,923

MANUFACTURE OF CALCIUM NITRITE SOLUTIONS WITH LOW NITRATE CONTENT

Samuel L. Bean, Jamesville; Philip F. Seeling, North Syracuse; Robert J. Hoffman, Liverpool, and William W. Low, Syracuse, all of N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

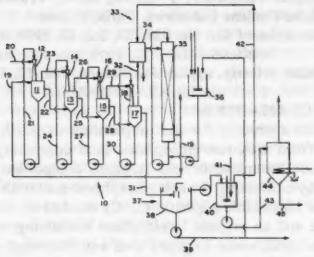
Filed Nov. 15, 1978, Ser. No. 960,820
Int. Cl.³ C01B *21/20*
U.S. Cl. 423—385 **10 Claims**

1. A process of producing an aqueous calcium nitrite solution low in calcium nitrate comprising the steps of:

(a) feeding an aqueous lime slurry of about 10–20 weight percent calcium hydroxide to at least two absorption reactors in series;

(b) feeding into the first absorption reactor a gaseous mixture

of nitrogen oxide gases having a percent state of oxidation of about 40–50% according to the formula



$$\text{percent state of oxidation} = \frac{\text{mols } eNO_2}{\text{mols NO} + \text{mols } eNO_2} \times 100$$

where eNO_2 is determined by adding two times the number of mols of N_2O_4 to the number of mols of NO_2;

(c) feeding the gaseous effluent from each absorption reactor to the next absorption reactor in cocurrent flow with the lime slurry;

(d) contacting the inlet gas of each absorption reactor with lime slurry at a rate wherein the local molar ratio of calcium hydroxide to nitrogen oxides is at least about 20; and

(e) maintaining at least about 2 weight percent calcium hydroxide and below about 22 weight percent calcium nitrite in the slurry in each absorption reactor.

4,285,924

SEPARATION OF ACIDS

Michael W. T. Pratt, Bingley, England, assignor to National Research Development Corp., London, England

Filed Apr. 3, 1980, Ser. No. 136,954

Claims priority, application United Kingdom, Apr. 4, 1979, 11855/79

Int. Cl.³ C01B *21/46*

U.S. Cl. 423—390 **12 Claims**

1. A method for the separation of nitric acid from a mixture of nitric acid with one or more of phosphoric, sulphuric or hydrochloric acids, in which the nitric acid is selectively extracted from a first phase comprising the acid mixture into a second phase by an amine nitrate.

4,285,925

PROCESS FOR THE CONVERSION OF LIGHT ASH TO ABSORPTIVE LOW BULK DENSITY ALKALI PRODUCTS

Rustom P. Poncha, Syracuse, N.Y., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Aug. 16, 1978, Ser. No. 934,137

Int. Cl.³ C01D *7/12, 7/14, 7/00*

U.S. Cl. 423—425 **7 Claims**

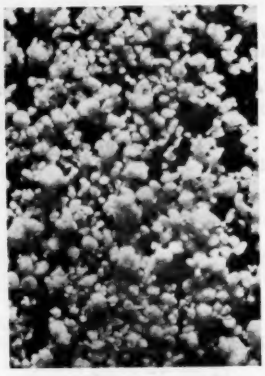
1. A method for the conversion of anhydrous sodium carbonate particles having a bulk density between about 500 and 650 g/l, into free-flowing, absorptive particles of Wegscheider's Salt, having a bulk density between about 275 and 320 g/l, which comprises the steps of:

(a) continuously contacting said anhydrous sodium carbonate particles, in a reaction zone, with between greater than about 1.0 and not more than about 1.20 of the stoichiometric amount of water required for the formation of sodium carbonate monohydrate;

(b) agitating the exothermic reaction mixture so produced until the temperature of the dry free-flowing hydrated particles is less than about 35° C.;

(c) contacting said dry hydrated particles having a temperature of no more than about 35° C. with substantially moisture-free carbon dioxide gas whereby the exothermic nature of the contact causes the temperature of the contacted particles to exceed 35° C. and continuing said contact until the rate of absorption of said gas by said particles decreases;

(d) externally heating the particles from step (c) until the temperature thereof is at least about 85° C., while continuously contacting said particles with a gaseous mixture comprising from about 30 to 75 weight percent water and



from about 70 to about 25 weight percent carbon dioxide and maintaining the reaction temperature between about 90° and 105° C. until the reaction mixture so produced contains at least about 85 weight percent Wegscheider's Salt product;

(e) continuously removing the product particles from said reaction zone; and

(f) continuously recovering the Wegscheider's Salt product particles having a free-moisture content of less than about 5 weight percent.

4,285,926

START-UP OF CARBON BLACK PROCESS

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Oct. 30, 1979, Ser. No. 89,420

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **14 Claims**

1. A method for starting-up a carbon black production process, in which smoke produced by a carbon black furnace is quenched to terminate the reaction and is thereafter cooled, at least in part, by indirect heat exchange with water, comprising:

(a) initially quenching said smoke with a quench fluid to a temperature substantially below a predetermined temperature of introduction into said heat exchange step said predetermined temperature being between about 1800° F. and about 2000° F.; and

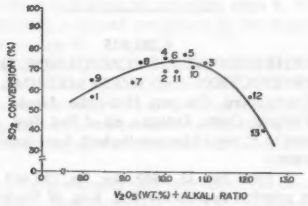
(b) reducing the magnitude of said quenching over an extended period of time until said smoke is being quenched to a temperature substantially equal to said predetermined temperature whereby the heat transfer coefficient of said smoke is improved.

4,285,927

PRODUCTION OF SULFURIC ACID USING A K_2SO_4, V_2O_5, DIATOMACEOUS EARTH CATALYST

Haruichi Hara, Toyonaka; Toshihide Kanzaki, Takatsuki; Hisanao Motomuro, and Akiyoshi Adachi, both of Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 689,807, May 25, 1976, abandoned. This application Aug. 29, 1977, Ser. No. 828,594
Claims priority, application Japan, May 29, 1975, 50-63492
Int. Cl.[3] C01B *17/74, 17/98;* B01J *27/02, 29/16*
U.S. Cl. 423—535 7 Claims



1. A process for the production of sulfuric acid comprising subjecting a gas containing 12 to 25% by volume of sulfur dioxide and more than the stoichiometric amount of molecular oxygen to gas phase catalytic oxidation reaction in the presence of a catalyst which consists of vanadium pentoxide, potassium sulfate and diatomaceous earth, wherein the ratio of K_2O(mol)/V_2O_5(mol) is 3.8 to 5.5, V_2O_5 content is 5.5 to 7.5% by weight and the sum of the value of said ratio and the V_2O_5 content (% by weight) is 9.3 to 11, said reaction being carried out at a temperature of at least 420° C. in the catalyst layer inlet and at a temperature of at most 800° C. in the catalyst layer outlet.

4,285,928

CONTRAST COMPOSITION FOR ANGIOGRAPHY

Juro Wada, 40-1, Haramachi-1-chome, Shinjuku-ku, Tokyo, Japan, and Toshinari Itaoka, Tokyo, Japan, assignors to Juro Wada, Tokyo, Japan

Filed Jan. 15, 1980, Ser. No. 112,275
Claims priority, application Japan, Jan. 25, 1979, 54-7437
Int. Cl.[3] A61K *49/04*
U.S. Cl. 424—5 2 Claims

1. A physiologically isotonic contrast composition for angiography comprising an emulsion containing an organic iodine compound as X-ray contrast agents and a perfluorocarbon compound having oxygen carrying ability, the organic iodine compound being at least one of sodium iodomethane sulfonate, 3,5-diido-4-pyridone-N-acetic acid diethanolamine, 3,5-diido-4-pyridone-Nacetic acid-N'methylglucamine salt, sodium 3-acetylamino-2,4,6-triiodobenzoate, sodium 3-acetamido-2,4,6-triiodo-5-N-methyl acetamido benzoate, mixture of of methyl glucamine salt and sodium salt of diatriazoate, sodium-5-acetamido-N-2,4,6-triiodo-isophthalamate, methyl glucamine-5-acetamido-2,4,6-triiodoisophthalamate or 3-acetamido methyl-5-acetamide-2,4,6-triiodobenzoic acid methyl glucamine salt and methylglucamine salt of iodamine, the perfluorocarbon compound being a mixture comprising 95 to 50 parts by weight of at least one member of the group consisting of perfluorodecalin and perfluoromethyldecalines and 5 to 50 parts by weight of at least one of perfluorotripropylamine, perfluoro-N,N-dibutylmonomethylamine, perfluoro-N,N-diethylpentylamine, perfluoro-N,N-dipropylbutylamine, perfluorotripropylamine, perfluoro-N,N-diethylcyclohexylamine, perfluoro-N-butylpiperidine, perfluoro-N-pentylmorpholine, perfluoro-N-hexylmorpholine, perfluoro-N-heptylmorpholine, and perfluoroadamantane, the concentration of the organic iodine compound being 5 to 80% (W/V) and the concentration of the perfluoro-carbon compound being 5 to 30% (W/V), the ratio of the organic iodine compound to the perfluoro-carbon compound being from 0.17:1 to 16:1, and the perfluorocarbon compound in the emulsion having a particle size of 0.05 to 0.3μ.

4,285,929

TYPE II INTERFERON AND AGENTS THEREOF

Kaname Sugimoto, and Shokichi Yuen, both of Okayama, Japan, assignors to Shin Ashida, Hyogo and Ken Hayashibara, Okayama, both of, Japan

Continuation-in-part of Ser. No. 5,585, Jan. 22, 1979. This application Jan. 7, 1980, Ser. No. 109,861
Claims priority, application Japan, Jan. 18, 1979, 54/4544
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.[3] A61K *45/02, 39/00*
U.S. Cl. 424—85 10 Claims

1. A process for preparing human-specific Type II interferon, comprising:

transplanting Type II interferon-producing established human cells into a non-human warm-blooded animal body;

multiplying the transplanted cells in a warm-blooded animal body;

exposing the multiplied human cells to the action of Type II interferon inducer in vivo or in vitro to induce Type II interferon; and

purifying and separating the induced Type II interferon.

4,285,930

ANTIGENS COMPRISING IMMUNOSTIMULANT ADJUVANTS AND THEIR USE IN IMMUNOTHERAPY

Vilas V. Likhite, 317 Marlborough St., Boston, Mass. 02116

Continuation of Ser. No. 858,847, Dec. 8, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 93,171
Int. Cl.[3] A61K *39/10, 39/00*
U.S. Cl. 424—92 6 Claims

1. An antigen conjugate useful in the production of relatively large titers of antibodies specific thereto, which antigen conjugate comprises an immunostimulant adjuvant consisting essentially of a primary antigen of a killed strain of *B. pertussis* mutant strain NRRL B-11,232 coupled by a diisocyanate-coupling agent to a secondary antigen comprising living adenocarcinoma tumor cells.

4,285,931

E. COLI ENTEROTOXIN VACCINE FOR VETERINARY AND HUMAN USE

Guadalupe A. Limjuco, Scotch Plains; Yashwant D. Karkhanis, Fanwood, and Dennis J. Carlo, South Amboy, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 873,181, Jan. 30, 1978, Pat. No. 4,220,584. This application Feb. 15, 1980, Ser. No. 122,092
Int. Cl.[3] A61K *37/02, 39/02*
U.S. Cl. 424—92 2 Claims

1. A method of immunizing against *E. coli* induced diarrhea comprising administering to humans or animals from 25 μg to 1,000 μg of the enterotoxin isolated from *E. coli* culture filtrate having a molecular weight of 10,000–13,000 when determined by gel filtration or by sucrose density gradient; containing 90% protein, 2% hexose, no 2-keto deoxy octonic acid; being a homogeneous single chain protein with N-terminal alanine when determined by the dansylation method and SDS-acrylamide electrophoresis; and showing no activity in the limulus lysate assay.

4,285,932

ENZYME DERIVATIVES FOR USE IN THE TREATMENT OF VENOUS THROMBOSIS

Richard A. G. Smith, Dorking, England, assignor to Beecham Group Limited, England

Filed Aug. 20, 1979, Ser. No. 68,205

Claims priority, application United Kingdom, Sep. 7, 1978, 35960/78

Int. Cl.[3] A61K *37/48*; C07C *103/52*; C07G *7/00*; C12N *9/70, 9/68, 9/99*

U.S. Cl. 424—94 28 Claims

1. A pharmaceutical composition for treatment of Venous thrombosis which comprises a pharmaceutically acceptable carrier together with an in vivo fibrinolytic enzyme as defined herein wherein the catalytic site essential for fibrinolytic activity is blocked by a group which is removable by hydrolysis at a rate such that the pseudo-first order rate constant for hydrolysis is in the range 10^{-6} sec^{-1} to 10^{-3} sec^{-1} in isotonic aqueous media at pH 7.4 at 37° C.

4,285,933

PROCESS FOR CONCENTRATING BLOOD COAGULATION FACTOR XIII DERIVED FROM HUMAN PLACENTAE

Tunekazu Fukushima, Kobe, and Satoshi Funakoshi, Katano, both of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Nov. 2, 1979, Ser. No. 91,245

Claims priority, application Japan, Nov. 7, 1978, 53/136996

Int. Cl.[3] A61K *35/48*

U.S. Cl. 424—105 1 Claim

1. A process for concentrating a blood coagulation Factor XIII derived from human placentae consisting essentially of

(1) recovering an extract with a physiologically saline solution from human placentae,

(2) removing precipitate from the solution by centrifugation,

(3) adding ammonium sulfate to the supernatant in a concentration of 20 to 30% (W/V),

(4) recovering the supernatant and removing the precipitate therefrom,

(5) adding ammonium sulfate to the supernatant in a concentration of 45 to 55% (W/V) to recover precipitate,

(6) dissolving the precipitate into a phosphate buffer solution of pH 6 to 9 containing about 0.005 M of EDTA,

(7) adding alkylene-oxide polymer of copolymer having a molecular weight of 2,000 to 20,000 which is selected from the group consisting of polyethylene oxide homopolymer, polypropylene oxide homopolymer and ethylene oxidepropylene oxide copolymer in a concentration of 4 to 0% W/V,

(8) removing the formed precipitate and recovering the supernatant,

(9) adding the above-mentioned alkylene-oxide polymer or copolymer to the supernatant in a concentration of 20 to 30% (W/V),

(10) recovering the precipitate formed and dissolving it into a phosphate buffer of pH 6 to 9,

(11) heat-treating the collected precipitate for 9 to 11 hours at 55° to 65° C. in an aqueous solution of a neutral amino acid, monosaccharide, sugar alcohol or a mixture of two or more thereof in a concentration of 10 to 20% (W/V) thereby to inactivate hepatitis virus,

(12) contacting the resulting solution with a DEAE-cross-linked dextran which had been equilibrated to pH of 6 to 9 thereby to absorb blood coagulation Factor XIII,

(13) eluting the blood coagulation Factor XIII with an about 0.05 M phosphate buffer containing about 0.5 M NaCl,

(14) subjecting the collected eluate to dialysis, sterilizing filtration and freeze-drying.

4,285,934

TREATMENT FOR HERPES VIRUS

James E. Tinnell, 3121 S. Maryland Pkwy, #II/200, Las Vegas, Nev. 89109

Continuation-in-part of Ser. No. 57,453, Jul. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 879,085, Feb. 21, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 162,252

Int. Cl.[3] A61K *33/22, 35/78, 31/60*

U.S. Cl. 424—148 2 Claims

2. A method for treatment of herpes virus lesions in a human host comprising topically applying to the lesions an effective amount of a composition comprising boric acid, tannic acid and salicylic acid in the weight ratio of about 7:7:3.

4,285,935

DEHYDROPEPTIDE COMPOUNDS, THEIR PRODUCTION AND THEIR MEDICAL USE

Eugen Etschenberg, Cologne; Haireddin Jacobi, Leichlingen, and Wolfgang Opitz, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

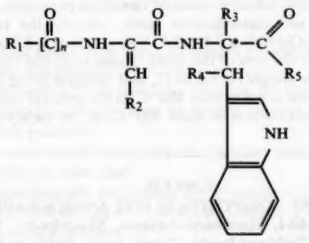
Filed Jan. 23, 1980, Ser. No. 114,468

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904512

Int. Cl.[3] A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 15 Claims

1. A compound which is a dehydropeptide of the formula



(I)

or a salt thereof,

in which

R_1 denotes a hydrogen atom, an optionally substituted alkyl, alkenyl, aralkyl, aralkenyl aryl, alkoxy group or a heterocyclic ring,

R_2 denotes a phenyl radical which is optionally substituted by alkyl, aryl, alkoxy, hydroxyl, nitro, amino, acylamino or halogen,

R_3 and R_4 both denote a hydrogen atom, or together denote an additional bond between the two carbon atoms,

R_5 denotes a hydroxyl group or an optionally substituted alkoxy, aralkoxy or amino group and

n is 1 or 0,

and in which, when R_3 and R_4 both denote a hydrogen atom, the centre of asymmetry C* at the substituent R_3 is in the racemate form, or in the D-form or L-form.

4,285,936

METHOD FOR PRODUCING A VACCINE AGAINST BACTERIAL INFECTIONS CAUSED BY *PSEUDOMONAS AERUGINOSA*

Gerald B. Pier, Brookline, Mass., and Jerald C. Sadoff, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 101,620

Int. Cl.[3] A61K *31/70*; C08B *37/00*; A61K *39/104*

U.S. Cl. 424—180 5 Claims

1. Method for isolating a nontoxic, nonpyrogenic polysac-

charide antigen from the crude slime of Pseudomonas aeruginosa comprising the steps of:

a. adding about 1% by volume of a 10% cetyltrimethylammonium bromide solution to said slime to form a mixture which is allowed to stand for about 30 minutes to permit precipitation of nucleic acids;
b. removing the nucleic acids precipitated in step a. by centrifugation;
c. adding about 80% by volume of a 95% ethanol to the product of step b. to cause precipitation;
d. collecting the precipitate formed in step c. by centrifugation and dissolving it in phosphate buffered saline;
e. subjecting the product formed in step d. to the same treatment given to said slime by repeating steps a., b. and c. then collecting a second precipitate in the manner provided for in step d.;
f. subjecting the precipitate collected in step e. to acetic acid hydrolysis followed by heating at around 90° C. for about 18 hours and allowing to cool to room temperature;
g. centrifuging the cooled product formed in step f. to separate the lipid polysaccharides from the acetic acid supernate;
h. extruding the acetic acid supernate formed in step g. with chloroform to remove residual lipid polysaccharides;
i. subjecting the polysaccharides products formed in step h. to alcoholysis to precipitate the polysaccharides from the aqueous layer and separating said polysaccharides by centrifugation;
j. dissolving the polysaccharide products in phosphate buffered saline, digesting with nucleases to remove nucleic acids and extracting the remaining protein therefrom with phenol;
k. mixing the polysaccharide product of step j., cooling and maintaining at a temperature of 4° C. for about 12 hours;
l. centrifuging the product of step k. to separate and remove the aqueous layer from the phenol layer;
m. subjecting the water layer formed in step l. to alcoholysis and separating the polysaccharides from the aqueous layer by centrifugation;
n. dissolving the polysaccharides of step m. in phosphate buffered saline and applied to a 2.6×100 cm column of Sephadex G-100 equilibrated in phosphate buffered saline;
o. combining the void volume fractions and subjecting to alcoholysis to precipitate the polysaccharides; and
p. isolating the polysaccharides having a molecular weight of from 100,000 to 300,000 daltons in the void volume by dissolving the polysaccharides of step o. in water and desalting on a 1.5×60 cm column of Sephadex G-50 equilibrated with a liquid selected from the group of distilled water and phosphate buffered saline having a pH of about 7.2.

3. Method of inducing immunity in a host to challenge by Pseudomonas aeruginosa organisms by inoculating said host with a therapeutically effective amount of polysaccharide antigen prepared according to claim **1**.

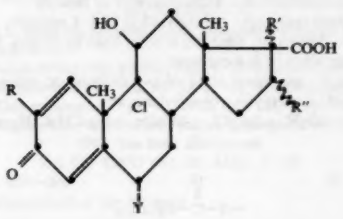
4,285,937

NOVEL ANDROSTADIENE-17-CARBOXYLIC ACID ESTERS

Jaroslav Kalvoda, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 936,285, Aug. 23, 1978, abandoned, which is a continuation of Ser. No. 770,155, Feb. 18, 1977, abandoned. This application Oct. 30, 1979, Ser. No. 89,677
Claims priority, application Switzerland, Feb. 24, 1976, 2253/76
Int. Cl.³ C07J *3/00*; A61K *31/56*
U.S. Cl. 424—243 **16 Claims**

1. Esters of androstadiene-17-carboxylic acids of the formula



wherein R' represents a hydroxyl group which is esterified with a lower aliphatic carboxylic acid having not more than 7 carbon atoms, R'' represents a methyl group in the alpha- or beta-position or the methylene group, R is H or Cl, and Y represents a hydrogen, chlorine or fluorine atom, with the proviso that Y is only Cl or F, when R is H and that the androstadiene-17-carboxylic acid ester group is derived from an aliphatic alcohol, so that said group contains not more than 6 carbon atoms.

10. An antiinflammatory pharmaceutical preparation which contains an antiinflammatory effective amount of a compound according to claim **1**, together with a pharmaceutical carrier.

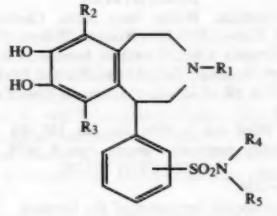
4,285,938

7,8-DIHYDROXY-1-(SULFAMYLPHENYL)-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE DERIVATIVES

Francis R. Pfeiffer, Cinnaminson, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Oct. 11, 1979, Ser. No. 83,874
Int. Cl.³ A61K *31/33, 31/36, 31/335*; C07D *223/16*
U.S. Cl. 424—244 **17 Claims**

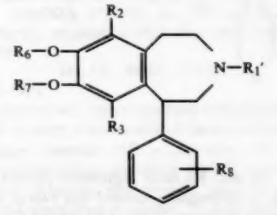
1. A compound of the formula:



in which:

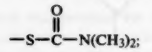
R_1 is hydrogen, lower alkyl of 1–4 carbons or allyl;
R_2 is hydrogen, halo or lower alkyl of 1–4 carbons;
R_3 is hydrogen, or when R_2 is other than hydrogen, halo or lower alkyl of 1–4 carbons; and
R_4 and R_5 are hydrogen or lower alkyl of 1–4 carbons; together with pharmaceutically acceptable acid addition salts thereof.

8. A compound of the formula:



in which:

R_1' is allyl, lower alkyl of 1–4 carbons, trichloroacetyl, benzyloxycarbonyl, trifluoroacetyl or benzyl;
R_2 is hydrogen, halo or lower alkyl of 1–4 carbons;
R_3 is hydrogen or, when R_2 is other than hydrogen, halo or lower alkyl of 1–4 carbons;
R_6 and R_7 are lower alkyl of 1–4 carbons or, when taken together, methylene or ethylene; and
R_8 is $-SO_3H$, $-SO_2Cl$, $-SO_2Br$, $-S-CH_2C_6H_5$ or



together with acid addition salts thereof acceptable for use as chemical intermediates.

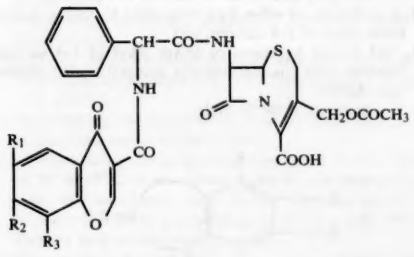
4,285,939

CEPHALOSPORIN DERIVATIVES, AND ANTIBACTERIAL DRUGS CONTAINING THE DERIVATIVES

Yoshimasa Machida, Wako; Isao Saito, Chofu; Motosuke Yamanaka, Urawa; Seiichiro Nomoto, Tokyo; Shigeto Negi, Kodaira; Kyosuke Kitoh, Kawague; Kanemasa Katsu, Chofu; Yukio Ohya, Koganei; Takeshi Suzuki, and Kyoko Koizumi, both of Abiko, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 137,753
Claims priority, application Japan, Apr. 9, 1979, 54-42023
Int. Cl.³ C07D *501/20*
U.S. Cl. 424—246 **6 Claims**

1. A cephalosporin derivative of the formula



wherein R_1, R_2 and R_3 each represents hydroxy, acetoxy, propionyloxy, or hydrogen, provided that two or three of R_1, R_2 and R_3 are not hydrogen at the same time or a non-toxic salt thereof.

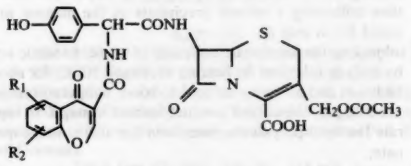
4,285,940

CEPHALOSPORIN DERIVATIVES, AND ANTIBACTERIAL DRUGS COMPRISING SAID DERIVATIVES

Yoshimasa Machida, Wako; Isao Saito, Chofu; Seiichiro Nomoto, Tokyo; Shigeto Negi, Kodaira; Hironori Ikuta, Tokyo, and Kyosuke Kitoh, Kawagoe, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 137,754
Claims priority, application Japan, Nov. 19, 1979, 54-148834
Int. Cl.³ C07D *501/26*
U.S. Cl. 424—246 **7 Claims**

1. A cephalosporin derivative of the formula



wherein R_1 and R_2 each represents hydroxyl, acetoxy, propionyloxy or benzoyloxy or a pharmaceutically acceptable salt thereof.

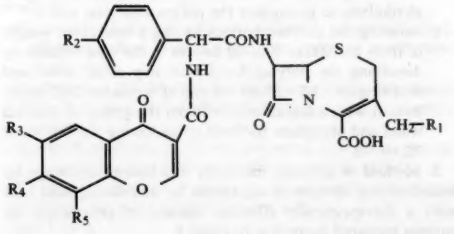
4,285,941

CEPHALOSPORIN COMPOUNDS AND ANTIBACTERIAL DRUGS CONTAINING THE SAME

Yoshimasa Machida, Wako; Isao Saito, Chofu; Seiichiro Nomoto, Tokyo; Shigeto Negi, Kodaira; Takeo Kanai, Honjo; Kyosuke Kitoh, Kawagoe; Kanemasa Katsu, Chofu; Yukio Ohya, Koganei, and Takeshi Nagasu, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 142,160
Claims priority, application Japan, Jun. 26, 1979, 54/79631
Int. Cl.³ C07D *501/36*
U.S. Cl. 424—246 **18 Claims**

1. A cephalosporin compound of the formula:



wherein R_1 represents a nitrogen-containing heterocyclic-thio group, the nitrogen-containing heterocyclic group of which is selected from the group consisting of pyrrolyl, pyridyl and its N-oxide, imidazolyl, pyrazolyl, pyrimidinyl, pyridazinyl, 1H-1,2,4-triazolyl, 4H-1,2,4-triazolyl, 1H-1,2,3-triazolyl, 2H-1,2,3-triazolyl, 1H-tetrazolyl, 2H-tetrazolyl, thiazolyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, oxazolyl, 1,3,4-oxadiazolyl, 1,2,5-oxadiazolyl, morpholino, benzothiazolyl, and benzoxazolyl, said heterocyclic groups being unsubstituted or substituted by methyl, ethyl, propyl, isopropyl, amino, dimethylaminoethyl, dimethylaminomethyl, diethylaminoethyl, carboxymethyl or carboxyethyl, R_2 represents hydrogen or hydroxy, and R_3, R_4 and R_5 each represents hydrogen, hydroxy, acetoxy, propionyloxy or benzyloxy or a pharmaceutically acceptable salt thereof.

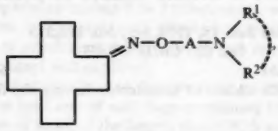
4,285,942

CYCLODODECANONE OXIMES

Zoltan Budai; Aranka Lay nee Konya; Tibor Mezei; Katalin Grasser; Lujza Petocz; Eniko Kiszelly, and Ibolya Kosoczky, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Dec. 3, 1979, Ser. No. 99,507
Claims priority, application Hungary, Dec. 19, 1978, EE 2614
Int. Cl.³ C07C *131/02;* A61K *31/15, 31/535*
U.S. Cl. 424—248.56 5 Claims

1. A cyclododecane derivative of the general formula



(I)

wherein R^1 and R^2 represent independently from each other a hydrogen atom, a C_{1-6} alkyl group or a C_{3-8} cycloalkyl group, or R^1 and R^2 form together with the nitrogen atom to which they are attached a morpholine or piperazine, and said ring may be optionally substituted by a C_{1-3} alkyl or a benzyl group; and A represents a C_{2-6} straight or branched alkylene chain, or an optically active isomer or pharmaceutically acceptable acid addition salt thereof.

5. A pharmaceutical composition having spasmolytic, local anesthetizing and nicotine-lethality inhibiting effect, containing a pharmaceutically effective amount of a cyclododecane derivative as claimed in claim 1 as the active agent, and a pharmaceutically acceptable excipient therefor.

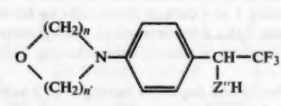
4,285,943

NOVEL PHARMACEUTICAL COMPOSITIONS INCORPORATING AN ARYLTRIFLUOROETHANOL

Michel Vincent, Bagneux; Georges Remond, Versailles, and Jacques Bure, Neuilly-sur-Seine, all of France, assignors to Science Union Et Cie, Suresnes, France

Filed Nov. 2, 1979, Ser. No. 90,636
Claims priority, application France, Nov. 3, 1978, 78 31096
Int. Cl.³ A61K *27/00, 31/33, 31/445, 31/495*
U.S. Cl. 424—244 9 Claims

1. A pharmaceutical composition incorporating as active ingredient an effective analgesic, antipyretic or anti-inflammatory amount of an aryltrifluoroethanol of the formula



(I)

wherein

n and n′ are each 2; and

Z″ is oxygen; or a therapeutically compatible acid addition salt thereof; in admixture with a pharmaceutically-acceptable carrier or vehicle.

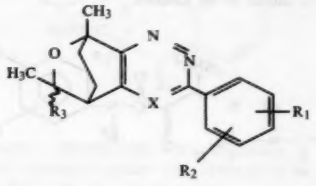
4,285,944

PYRANO[4,3]-AS-TRIAZINES AND CORRESPONDING 4-OXIDES

Gregory B. Bennett, Mendham, NJ, assignor to Sandoz, Inc., E. Hanover, N.J.

Continuation of Ser. No. 65,279, Aug. 9, 1979, abandoned, which is a continuation of Ser. No. 957,189, Nov. 2, 1978, abandoned.
This application Apr. 10, 1980, Ser. No. 139,109
The portion of the term of this patent subsequent to Oct. 14, 1997, has been disclaimed.
Int. Cl.³ C07D *491/08;* A61K *31/53*
U.S. Cl. 424—249 18 Claims

1. A compound of the formula

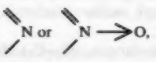


wherein

R_1 and R_2 each independently represent hydrogen, halo having an atomic weight of about 19 to 36, lower alkyl, straight chain lower alkoxy, amino, nitro or trifluoromethyl, and

R_3 represents hydrogen or lower alkyl, and

X represents



provided that

(i) when one of R_1 and R_2 represents nitro, the other is other than nitro or trifluoromethyl;

(ii) when R_1 and R_2 represent trifluoromethyl, they are on other than adjacent carbon atoms; and

(iii) when R_1 and R_2 represent t-butyl, they are on other than adjacent carbon atoms, and

(iv) when one of R_1 and R_2 is trifluoromethyl and the other is t-butyl, they are on other than adjacent carbon atoms.

17. A method of inducing sleep which comprises administering a sleep-inducing effective amount of a compound according to claim 1.

4,285,945

ANTITHROMBOTIC PHARMACEUTICAL COMPOSITIONS AND METHOD OF USE

Sherrill J. Slichter, 5201 SW. Canada Dr., Seattle, Wash. 98126

Filed Sep. 17, 1979, Ser. No. 76,510
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904736
Int. Cl.³ A61K *31/505*
U.S. Cl. 424—251 3 Claims

1. An antithrombotic pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an antithrombotic effective amount of a mixture of 2,6-bis-(diethanolamino)-4-piperidino-pyrimido [5,4-d] pyrimidine and sulfinpyrazone wherein the weight ratio of 2,6-bis-(diethanolamino)-4-piperidino-pyrimido [5,4-d] pyrimidine and sulfinpyrazone is 1:2.

4,285,946
4-AMINO-2-UREIDO (OR -THIOUREIDO)-PYRIMIDINE-5-CARBOXYLIC ACID ANILIDES

Klaus-Dieter Kampe, Bad Soden am Taunus, and Ernold Granzer, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

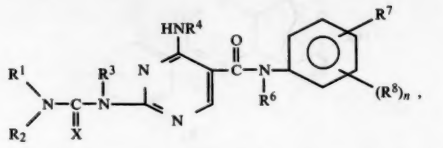
Filed Dec. 7, 1979, Ser. No. 101,160

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1978, 2853220

Int. Cl.[3] **A61K** *31/505;* **C07D** *239/48, 403/12*

U.S. Cl. 424—251 **9 Claims**

1. A 4-amino-2-ureido (or -thioureido)-pyrimidine-5-carboxylic acid anilide of the formula



or a physiologically acceptable acid addition salt thereof, wherein

X is oxygen or sulfur,

R^1 is hydrogen, (C_1–C_3)-alkyl, or phenyl;

R^2 taken alone is hydrogen, (C_1–C_{10})-alkyl, (C_3–C_4)-alkenyl, (C_4–C_8)-cycloalkyl, phenyl, phenylalkyl having 1 or 2 carbon atoms in the alkyl portion, or is phenyl or such phenylalkyl mono- or di-substituted in the benzene ring by (C_1–C_3)-alkyl, halogen, or (C_1–C_4)-alkoxy, or substituted by trifluoromethyl, methoxycarbonyl, ethoxycarbonyl, or methylenedioxy;

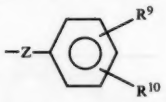
R^3 taken alone is hydrogen, (C_1–C_3)-alkyl, or phenyl;

R^2 and R^3 taken together are —(CH=CH)—, linear or branched (C_2–C_8)-alkylene, or such alkylene substituted by (C_2–C_4)-alkenyl, by phenyl, or by phenyl substituted by chlorine, bromine, methyl, ethyl, methoxy, or ethoxy;

R^4 is hydrogen or (C_1–C_8)-acyl;

R^6 is hydrogen, (C_1–C_3)-alkyl, (C_3–C_4)-alkenyl, benzyl, phenyl, benzyl mono- or di-substituted in the benzene ring by chlorine or methoxy, or phenyl substituted by methyl, chlorine, or by methyl and chlorine;

R^7 taken alone is hydrogen, (C_1–C_3)-alkyl, (C_3–C_4)-alkenyl, (C_5–C_6)-cycloalkyl, phenyl, halogen, trifluoromethyl, (C_1–C_4)-alkylthio, (C_1–C_2)-alkoxycarbonyl, cyano, acetamino, amino, nitro, carboxyl, (C_1–C_4)-alkoxy or



wherein

Z is oxygen, sulfur,

—CH_2—, or —CH_2CH_2—, and

R^9 and R^{10}, which are the same or different, are hydrogen, fluorine, chlorine, bromine, (C_1–C_3)-alkyl, (C_1–C_2)-alkoxy, acetamino, (C_1–C_2)-alkoxycarbonyl, or carbonyl;

R^8 is fluorine, chlorine, bromine, methyl, (C_1–C_2)-alkoxy, or trifluoromethyl;

n is 0, 1, 2, or 3;

and if n is 1, then

R^7 and R^8, taken together, may be methylenedioxy or ethylenedioxy.

6. A pharmaceutical composition for treating disturbances in the lipometabolism, said composition comprising an amount of a compound or salt as in claim **1** effective to affect the lipometabolism together with a pharmaceutically-acceptable carrier therefor.

4,285,947
ALDEHYDE ADDUCTS OF TRIAMTERENE

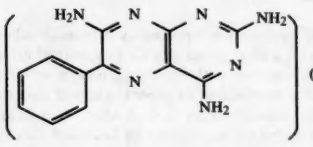
Takeru Higuchi, and Anand C. Burman, both of Lawrence, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

Filed Jan. 18, 1980, Ser. No. 113,313

Int. Cl.[3] **C07D** *475/08*

U.S. Cl. 424—251 **60 Claims**

1. An aldehyde adduct of triamterene having the formula:



(I)

wherein R is selected from the group consisting of:

hydrogen;

alkyl of 1 to 20 carbon atoms;

cycloalkyl of 3 to 8 carbon atoms;

phenyl;

naphthyl;

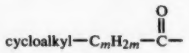
alkenyl of 2 to 20 carbon atoms;

alkynyl of 2 to 20 carbon atoms;

cycloalkenyl of 4 to 8 carbon atoms;

alkanoyl having 1 to 22 carbon atoms;

alkenoyl having one or two double bonds and having 4 to 22 carbon atoms;



having a total of 4 to 10 carbon atoms of which 3 to 7 are ring atoms in the cycloalkyl portion and wherein m is zero, one or two and cycloalkyl is unsubstituted or is substituted by 1 or 2 lower alkyl groups;

phenoxyacetyl;

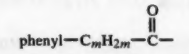
1-naphthalenecarbonyl;

2-naphthalenecarbonyl;

2-pyridinecarbonyl;

3-pyridinecarbonyl;

4-pyridinecarbonyl;



wherein m is zero, one or two and phenyl is unsubstituted or is substituted by 1 to 3 substituents, each of which may be alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halo, trifluoromethyl, dialkylamino having 2 to 8 carbon atoms or alkanoylamino having 1 to 6 carbon atoms;

substituted phenyl and naphthyl having 1 to 3 substituents, which may be the same or different, each of which is selected from the group consisting of lower alkylthio, lower alkyl, halo, lower alkoxy, nitro, cyano, lower alkanoyl, lower carbalkoxy, di(lower alkyl)amino, lower alkanoyloxy, lower haloalkyl, lower alkylsulfonyl, hydroxy, lower hydroxyalkyl, amino, lower alkanoylamino,

lower alkylamino, carboxyl, lower carboxyalkyl, carbamoyl, lower alkylcarbamoyl, di(lower alkyl)carbamoyl, lower alkenyl, lower alkynyl, oxo, and -alkylene-aryl wherein the aryl portion is phenyl or naphthyl and the alkylene portion has up to 6 carbon atoms;

substituted alkyl, cycloalkyl, alkenyl, alkynyl and cycloalkenyl wherein alkyl, cycloalkyl, alkenyl, alkynyl and cycloalkenyl are as defined above with respect to R, having 1 to 3 substituents, which may be the same or different, each of which is selected from the group consisting of halo, hydroxy, lower alkoxy, carboxy, oxo, lower alkanoyloxy, phenoxy, naphthoxy, and substituted phenoxy and naphthoxy having 1 to 3 substituents, which may be the same or different, each of which is selected from the group of substituents defined above with respect to substituted phenyl and naphthyl;

saturated and unsaturated heterocyclic groups of 1 to 3 rings, at least one of said rings containing from 1 to 3 of any one or more of the hetero atoms N, S and O, each of said rings being 3- to 8-membered, all ring atoms in each of said rings which are other than N, S and O being carbon, with the proviso that when there are 2 or 3 of said rings, then said rings are fused;

substituted derivatives of the aforesaid heterocyclic groups having 1 to 3 substituents, which may be the same or different, each of which is selected from the group consisting of lower alkyl, lower haloalkyl, halo, amino, oxo, nitro, hydroxy, lower hydroxyalkyl, carboxyl, lower carboxyalkyl, lower alkanoylamino, lower alkoxy, lower alkanoyl, lower alkanoyloxy, cyano, lower carbalkoxy, lower alkylthio, lower alkylamino, di(lower alkyl)amino, carbamoyl, lower alkylcarbamoyl, di(lower alkyl)carbamoyl, lower alkenyl, lower alkynyl, lower alkylsulfonyl, phenyl, naphthyl, and -alkylene-aryl wherein the aryl portion is phenyl or naphthyl and the alkylene portion has up to 6 carbon atoms; and

a radical of the formula —Alk—Z wherein Alk is an alkylene, alkenylene or alkynylene group having up to 6 carbon atoms and wherein Z is selected from the group consisting of the unsubstituted and substituted cycloalkyl, cycloalkenyl, phenyl, naphthyl, and heterocyclic groups as defined above with respect to R;

and wherein n is a number from 1 to 3 inclusive, with the proviso that when R is hydrogen, than n can be a number from 1 to 6 inclusive.

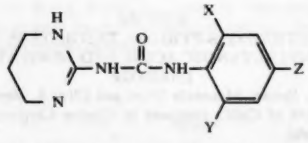
4,285,948

N-ARYL-N'-(1,4,5,6-TETRAHYDROPYRIMIDINE-2-YL)UREAS AS ANTIHYPERTENSIVES

Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Jun. 16, 1980, Ser. No. 159,988
Int. Cl.³ A61K *31/505;* **C07D** *239/02*
U.S. Cl. 424—251 **6 Claims**

1. A method which comprises administering to a hypertensive animal, a therapeutically-effective antihypertensive amount of a compound selected from the group consisting of (a) an N-(phenyl)-N'-(1,4,5,6-tetrahydropyrimidin-2-yl)urea having the formula:



wherein Z is H or F; X and Y are each independently selected from the group consisting of Br, Cl, F, CH_3, CF_3 and OCH_3; and (b) a pharmaceutically-acceptable salt thereof.

4,285,949

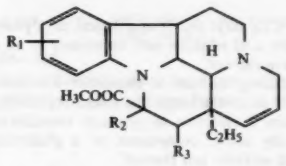
VINCAMINE DERIVATIVES, THEIR PREPARATION AND THERAPEUTICAL USE

Jean A. A. J. Hannart, Chaumont-Gistoux, Belgium, assignor to Omnichem Societe Anonyme, Brussels, Belgium

Filed Dec. 11, 1978, Ser. No. 968,147
Int. Cl.³ A61K *31/445;* **C07D** *461/00*
U.S. Cl. 424—256 **5 Claims**

1. A process for preparing a compound of the formula

(I)



in which:

R_1 represents a chlorine atom in the 10-position

R_2 and R_3 represent together an additional carbon-carbon bond which comprises the steps of:

(a) reacting tabersonine with hydrochloric acid in solution in an alcohol for 2–4 days at room temperature in the presence of a peracid selected from the group consisting of m-chloroperbenzoic acid, perphthalic acid and p-nitroperbenzoic acid,

(b) heating the resulting compound of formula I wherein R_2 and R_3 represent respectively OH and H in formic acid at 99%.

3. A compound of formula I as defined in claim 1 being 10-chloro dehydro-14,15 apovincamine (or 10-chloro $\Delta_{14,15}$ apovincamine).

4. A pharmaceutical composition for use in human and veterinary medicine in treating cardio circulatory, cerebrovascular and respiratory insufficiencies, containing an effective amount of about 1 to 200 mg of an active ingredient comprising at least the compound of formula I as defined in claim 1 together with a pharmaceutically acceptable carrier.

5. A method of treating cardiocirculatory, cerebrovascular and respiratory insufficiency comprising daily administration to a patient in need of such treatment of a pharmaceutical composition comprising 3 mg to 600 mg daily dosage of the vincamine derivative as defined in claim 1 in its base or salt form together with a pharmaceutically acceptable excipient.

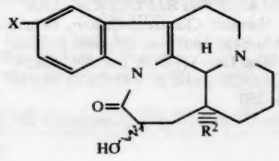
4,285,950

10-HALO-E-HOMOEBURNANE DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF, A PROCESS FOR THE USE THEREOF AS VASODILATORS, AND VASODILATING COMPOSITIONS THEREOF

Csaba Szantay; Lajos Szabo; György Kalaus; Lajos Dancsi; Tibor Keve, and Ferenc Drexler, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt, Budapest, Hungary

Filed Aug. 5, 1980, Ser. No. 175,383
Claims priority, application Hungary, Aug. 13, 1979, RI 723
Int. Cl.³ C07D *471/22;* **A61K** *31/395*
U.S. Cl. 424—256 **7 Claims**

1. A compound of the formula (I),



wherein R^2 is C_{1-6} alkyl and X is halogen, or a pharmaceutically acceptable acid addition salt, an epimer or an optically active derivative thereof.

7. A vasodilating method of treatment which comprises administering to an animal subject an amount of a compound as defined in claim 1 effective to produce vasodilation or an epimer, optically active component or a pharmaceutically acceptable acid addition salt thereof.

4,285,951

2,2-DIMETHYL-5-(2,5-DIMETHYLPHENOXY)PENTYL ESTER OF 3-PYRIDINE CARBOXYLIC ACID AND USE AS AN ANTI-ATHEROSCLEROTIC AGENT

Milton L. Hoefle, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 7, 1979, Ser. No. 73,334
Int. Cl.[3] A61K *31/44*; C07D *213/55*
U.S. Cl. 424—263 **3 Claims**

1. The compound which is the 2,2-dimethyl-5-(2,5-dimethylphenoxy)pentyl ester of 3-pyridine carboxylic acid, and the pharmaceutically-acceptable acid-addition salts thereof.

3. A method of treating a mammal suffering from atherosclerosis which comprises administering to said mammal an anti-atherosclerotic effective amount of a compound as defined in claim 1, and the pharmaceutically-acceptable acid-addition salts thereof.

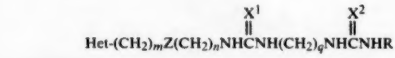
4,285,952

PYRIDYL, THIAZOLYL AND ISOTHIAZOLYL ALKYL BISAMIDINES

Graham J. Durant, Welwyn Garden City, and Peter D. Miles, Hitchin, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 902,145, May 2, 1978, Pat. No. 4,212,875. This application Nov. 13, 1979, Ser. No. 93,366
Claims priority, application United Kingdom, May 5, 1977, 18881/77
Int. Cl.[3] A61K *31/44, 31/425*; C07D *213/54, 213/60, 277/30, 277/32, 275/05*
U.S. Cl. 424—263 **11 Claims**

1. A compound of the structure



in which

Het is a 5- or 6-membered fully unsaturated heterocycle containing at least one nitrogen atom, said heterocycle being pyridine optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy or amino; or thiazole or isothiazole which are attached at a ring carbon and which are optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen or lower alkoxy;

Z is sulphur or methylene;

m is 0, 1 or 2, n is 2 or 3, and m+n is 3 or 4;

R is hydrogen or lower alkyl;

each of X^1 and X^2 is sulphur, a nitromethylene group $CHNO_2$, or an imino group NY, where Y is hydrogen, hydroxy, lower alkyl, cyano or carbamoyl $CONH_2$; and

q is from 2 to 12;

in the form of the free base or its pharmaceutically-acceptable acid addition salts.

11. A method of blocking histamine H_2-receptors which comprises administering to an animal in need thereof in an effective amount to block said receptors a compound of claim 1.

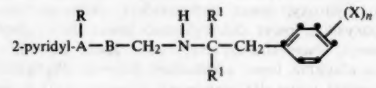
4,285,953

INHIBITION OF BIOSYNTHESIS OF TRIGLYCERIDES BY CERTAIN N-β-PHENETHYL-N-PYRIDYLALKYLAMINES

George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 117,160, Jan. 31, 1980, abandoned. This application Nov. 3, 1980, Ser. No. 202,996
Int. Cl.[3] A61K *31/44*
U.S. Cl. 424—263 **1 Claim**

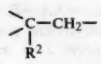
1. A method for inhibiting biosynthesis of triglycerides in swine which comprises administering, to a pig in need of such treatment, orally or parenterally, an effective amount of a compound of the formula:



(I)

wherein

(a) the bridging fragment >A—B— is one of



and >C=CH—;

(b) R is 2-pyridyl or

(c) each of R^1 is hydrogen or methyl;

(d) R^2 is hydrogen or hydroxyl;

(e) n is zero or one;

(f) X is halogen or alkyl of one to three carbon atoms;

(g) m is zero or one;

(h) Y is alkyl of one to three carbon atoms, and their physiologically acceptable acid addition salts.

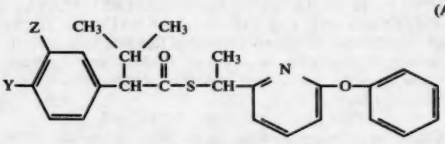
4,285,954

PESTICIDAL S-PYRIDYL THIOESTERS OF PHENYLBUTANOIC ACIDS AND DERIVATIVES THEREOF

Thomas L. Brown, Mountain View, and Clive A. Henrick, Palo Alto, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Filed Nov. 19, 1980, Ser. No. 208,469
Int. Cl.[3] C07D *213/83, 405/12*; A61K *31/44*
U.S. Cl. 424—263 **6 Claims**

1. A compound of the following formula (A):



(A)

wherein,

Y is hydrogen, lower alkyl of one to four carbon atoms, lower alkoxy of one to four carbon atoms, bromo, chloro, difluoromethoxy, trifluoromethoxy or trifluoromethyl; and

Z is independently selected from the values of Y; or Y and Z together form a methylenedioxy or a difluoromethylenedioxy group.

5. A method for controlling insects or acarids which comprises applying to the locus a pesticidally effective amount of a compound of claim 1.

4,285,955

1,4-DIHYDROPYRIDINECARBOXYLIC ACIDS

Egbert Wehinger, Velbert, and Friedrich Bossert, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

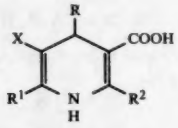
Filed Oct. 12, 1979, Ser. No. 84,338

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847237; May 26, 1979, 2921429

Int. Cl.[3] **C07D** *213/22, 211/80;* **A61K** *31/44*

U.S. Cl. 424—266 **15 Claims**

1. A compound of the formula



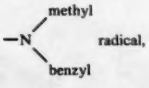
(I)

or a salt thereof, in which

R denotes a 2-nitrophenyl radical, a 3-nitrophenyl radical, a 2-trifluoromethylphenyl radical, a 2-chlorophenyl radical or a 2-methylmercaptopyridyl radical,

R^1 and R^2 denotes methyl groups and

X denotes COOH or $COOR^4$, whereby R^4 denotes a straight-chain, branched or cyclic alkyl radical with up to 6 carbon atoms, which is optionally interrupted by an oxygen atom in the chain or is substituted by 1 to 2 trifluoromethyl groups or by an



but R^4 is only a methyl or isobutyl radical when R denotes a 2-nitrophenyl radical.

4,285,956

XANTHENE AND THIOXANTHENE DERIVATIVES, COMPOSITIONS THEREOF AND TREATMENT THEREWITH

Niels Lassen, Gentofte; Klaus P. Boges, Lyngby; Peter B. Hansen, Allerod; Jorn L. M. Buus, Bjaverskov, and Allan J. Bigler, Copenhagen, all of Denmark, assignors to Kefalas A/S, Copenhagen-Valby, Denmark

Filed May 3, 1979, Ser. No. 35,735

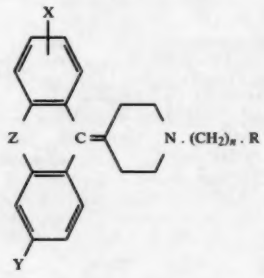
Claims priority, application United Kingdom, May 12, 1978, 19310/78

Int. Cl.[3] **A61K** *31/445;* **C07D** *405/04, 409/04;* **A01N** *43/40;* **C07D** *279/00*

U.S. Cl. 424—267 **15 Claims**

1. A compound selected from the group consisting of

(1) a xanthene- and thioxanthene derivatives of the formula:



I

wherein

X is selected from the group consisting of halogen, an alkyl group with from one to four carbon atoms inclusive, an alkyloxy group with from one to four carbon atoms inclusive, a methylthio group, a methylsulphonyl group, a dimethylsulphamoyl group, a trifluoromethyl group and an acetyl group;

Y is selected from the group consisting of hydrogen, fluorine and a methyl group;

Z is selected from the group consisting of oxygen and sulphur;

n is an integer from zero to three inclusive, and

R is selected from the group consisting of a cycloalkyl group with from four to six carbon atoms inclusive in the ring, substituted with from one to four substituents selected from optionally esterified hydroxy or hydroxymethyl groups, methyl groups, amino groups, acetamino groups, mesylamino groups and oxo groups, any esterified hydroxy group present being an ester of an aliphatic carboxylic acid having from ten to twenty-two carbon atoms inclusive, with the proviso that methyl is present only when one of the other named substituents is also present, and

(2) a non-toxic pharmaceutically acceptable acid addition salt thereof.

4,285,957

1-PIPERIDINE-ALKANOL DERIVATIVES, PHARMACEUTICAL COMPOSITIONS THEREOF, AND METHOD OF USE THEREOF

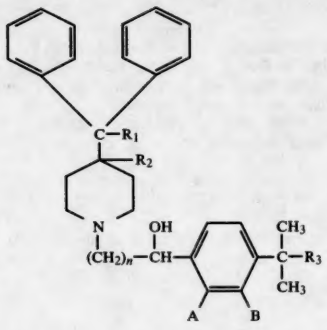
Albert A. Carr; Joseph E. Dolfini, both of Cincinnati, Ohio, and George J. Wright, Richmond, Va., assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 28,813, Apr. 10, 1979. This application Oct. 14, 1980, Ser. No. 196,505

Int. Cl.[3] **C07D** *211/22;* **A61K** *31/445;* **C07D** *211/70*

U.S. Cl. 424—267 **6 Claims**

1. A compound of the formula



wherein R_1 represents hydrogen or hydroxy; R_2 represents hydrogen; or R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2; n is an integer of from 1 to 5; R_3 is $—CH_3$, or $—CH_2OH$; each of A and B is hydrogen or hydroxy; with the provisos that at least one of A or B is hydrogen and one of A or B is other than hydrogen when R_3 is $—CH_3$; and pharmaceutically acceptable salts and individual optical isomers thereof.

6. A method of treating allergic reactions in a patient in need thereof which comprises administering to said patient an anti-allergically effective amount of a compound of claim 1.

4,285,958

1-PIPERIDINE-ALKYLENE KETONES, PHARMACEUTICAL COMPOSITIONS THEREOF AND METHOD OF USE THEREOF

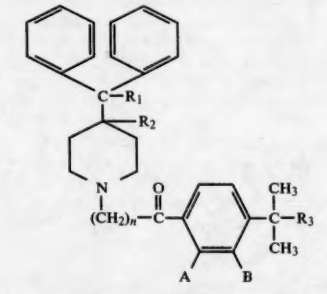
Albert A. Carr; Joseph E. Dolfini, both of Cincinnati, Ohio, and George J. Wright, Richmond, Va., assignors to Richardson-Merrell Inc., Wilton, Conn.

Division of Ser. No. 28,872, Apr. 10, 1979. This application Oct. 14, 1980, Ser. No. 196,951

Int. Cl.³ C07D *211/70*; A61K *31/445*; C07D *211/22*

U.S. Cl. 424—267 **12 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or hydroxy; R_2 is hydrogen; or R_1 and R_2 taken together form a second bond between the carbon atoms bearing R_1 and R_2; n is an integer of from 1 to 5; R_3 is $—CH_3$, or $—CH_2OH$; and A and B are individually hydrogen or hydroxy; with the provisos that at least one of A or B is hydrogen, and one of A or B is other than hydrogen when R_3 is $—CH_3$; and pharmaceutically acceptable acid addition salts thereof.

12. A method of treating allergic reactions in a patient in need thereof which comprises administering to said patient an anti-allergically effective amount of a compound of claim 1.

4,285,959

3-(N-1,3,4-THIADIAZOLYL-2)-AMINOALKYL-ALKYL-ACRYLATES AND USE THEREOF AS BACTERICIDES

Karl Gätzi, Basel; Hanspeter Baumann, Reinach, both of Switzerland; Walter Kunz, Manchester, England, and Bernhard Gloor, Pratteln, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

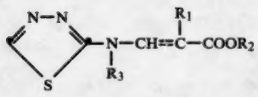
Filed May 7, 1980, Ser. No. 147,457

Claims priority, application Switzerland, May 18, 1979, 4670/79; Apr. 14, 1980, 2857/80

Int. Cl.³ A01N *43/82*; C07D *285/08, 417/12*

U.S. Cl. 424—270 **12 Claims**

1. A compound of the formula



(I)

wherein R_1 is hydrogen or C_1–C_4 alkyl; R_2 is C_1–C_4 alkyl; and R_3 is hydrogen or the group $—CO—R_4$ in which R_4 is methoxymethyl, C_3–C_6 cycloalkyl, C_1–C_4 alkyl optionally mono- or poly-substituted by chlorine, C_2–C_4 alkenyl optionally mono- or poly-substituted by chlorine, furyl, thienyl, pyridyl or phenyl, the pyridyl or phenyl groups each being optionally mono- to tetra-substituted by one or more members selected from the group consisting of C_1–C_4 alkyl, chlorine, cyano and nitro.

6. A composition for controlling and/or preventing attack by phytopathogenic bacteria, said composition containing, as active component, a bactericidally effective amount of a compound according to claim 1 together with one or more inert carriers or diluents.

4,285,960

PENICILLIN COMPOSITIONS

Harry Ferres, Horsham, England, assignor to Beecham Group Limited, England

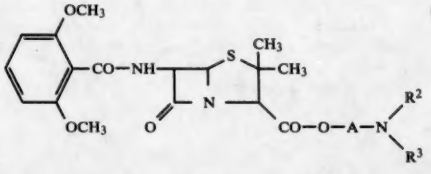
Continuation of Ser. No. 800,281, May 25, 1977, abandoned. This application Sep. 14, 1978, Ser. No. 942,293

Claims priority, application United Kingdom, Jun. 11, 1976, 24219/76

Int. Cl.³ A61K *31/43*

U.S. Cl. 424—271 **6 Claims**

1. A method for the treatment of bacterial infections in humans comprising orally administering to a human in need thereof a composition of a pharmaceutically acceptable carrier together with an antibacterially effective amount of a methicillin ester of formula (III):



(III)

or a pharmaceutically acceptable acid addition salt thereof, wherein A is C_{1-6} alkylene unsubstituted or substituted by methyl or ethyl, and R^2 and R^3 are the same or different and each is C_1–C_6 alkyl, the composition being in oral dosage form.

4,285,961

BASIC THIOETHERS

Helmut Prücher, Heppenheim; Jürgen Uhl, Seeheim; Hans-Adolf Kurmeier, Darmstadt; Volkmar Rudolph, Seeheim, and Helmut Wahlig, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

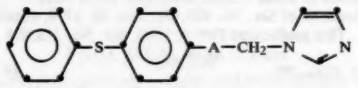
Continuation of Ser. No. 926,350, Jul. 20, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,456

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732750

Int. Cl.[3] A61K *31/415;* C07D *233/20*

U.S. Cl. 424—273 R 7 Claims

1. A thioether of the formula



wherein A is —CH=CH—, —CH=C(CH$_3$)— or —CH$_2$—CH(CH$_3$)—.

5. A pharmaceutical composition comprising an antimicroorganismically effective amount of a thioether of claim 1 and a pharmaceutically acceptable carrier.

4,285,962

PHARMACEUTICAL COMPOSITIONS HAVING ANTI-ULCER ACTIVITY

Jose S. Franzone, Turin, Italy, assignor to Istituto Biologico Chemioterapico "ABC" S.p.A., Turin, Italy

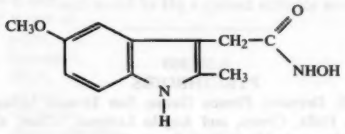
Filed Aug. 25, 1980, Ser. No. 180,920

Claims priority, application Italy, Sep. 26, 1979, 26016 A/79

Int. Cl.[3] A61K *31/40, 31/405*

U.S. Cl. 424—274 4 Claims

1. The method of treatment of gastritis and peptic ulcers in a living patient in need of said treatment which consists of administering to said patient an effective amount of 5-methoxy-2-methyl-3-indolyl-acetohydroxamic acid of formula I



(I)

4,285,963

NOVEL DERIVATIVES OF C-076 COMPOUNDS

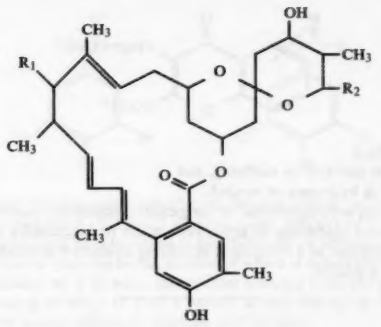
Byron H. Arison, Watchung; Robert T. Goegelman, Linden, and Vincent P. Gullo, Edison, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 7, 1980, Ser. No. 175,615

Int. Cl.[3] A61K *31/365;* C07D *493/20, 313/06*

U.S. Cl. 424—279 9 Claims

1. A compound having the formula:



wherein (a) R_1 is —OH and R_2 is sec-butyl; (b) R_1 is =O and R_2 is sec-butyl; (c) and R_1 is —OH and R_2 is iso-propyl.

9. A method for the treatment of parasitic infections which comprises administering to an animal infected with parasitic infection, an effective amount of a compound of claim 1 or 5.

4,285,964

SALTS OF (+)-CATECHINE, THEIR PREPARATION AND USE, AND COMPOSITIONS CONTAINING THESE SALTS

Paul Niebes, Grez Doiceau; Andras Vincze, Brussels; Joseph Roba, Ciernont-Houyet; Georges Lambelin, Brussels; Daniel Matagne, Taviers; Etienne Hanon, and Michel Franz, both of Brussels, all of Belgium, assignors to Continental Pharma, Brussels, Belgium

Filed Aug. 30, 1979, Ser. No. 71,076

Int. Cl.[3] A61K *31/35;* C07D *311/62*

U.S. Cl. 424—283 13 Claims

1. A salt of (+)-catechin which is the reaction product of (+)-catechin with at least one basic amino-acid selected from the group consisting of L-lysine and L-arginine.

2. A hydrosoluble double salt of (+)-catechin which is the reaction product of (+)-catechin, a basic amino-acid selected from the group consisting of L-lysine and L-arginine and another acid selected from the group consisting of hydrochloric acid, ascorbic acid, acetic acid and citric acid.

6. A pharmaceutical composition for the treatment of diseases of the articular cartilage comprising, as active product, an effective amount of at least one hydrosoluble double salt of (+)-catechin as claimed in claim 2, in association with a suitable excipient.

4,285,965

COMBATING PESTS WITH 2-CARBOXYMETHYL-3-CARBOXY-CHROMONES AND ESTERS

Hans-Joachim Kabbe; Paul-Ernst Frohberger, both of Leverkusen, and Peter Roessler, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

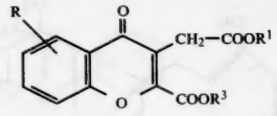
Division of Ser. No. 39,620, May 16, 1979, abandoned, which is a division of Ser. No. 918,129, Jun. 22, 1978, Pat. No. 4,189,498. This application Dec. 17, 1979, Ser. No. 104,223

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2731566

Int. Cl.[3] A61K *31/35;* C07D *311/24*

U.S. Cl. 424—283 6 Claims

1. A compound of the formula



in which

R is chlorine or methoxy, and

R^3 is hydrogen or methyl.

6. An arthropodicidal or fungicidal composition containing as active ingredient an arthropodicidally or fungicidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,285,966

CERTAIN 15-EPI-PROSTACYCLINS

Carmelo Gandolfi, Milan; Carlo Passarotti, Gallarate; Alessandro Andreoni, Cologno Monzese; Angelo Fumagalli, Monza; Franco Faustini, and Roberto Cesarani, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

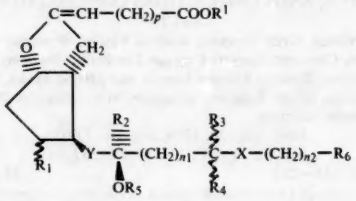
Filed Oct. 30, 1978, Ser. No. 955,631

Claims priority, application Italy, Nov. 25, 1977, 30029 A77

Int. Cl.³ C07D *307/935;* **A61K** *31/557*

U.S. Cl. 424—285 **12 Claims**

1. A 15-epi compound of the formula



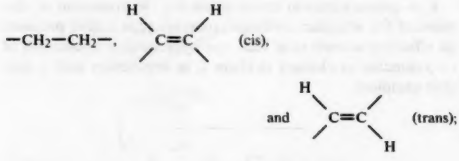
wherein

R^1 is hydrogen or C_1–C_6 alkyl;

p is zero or an integer of 1–7;

R_1 is hydroxy, C_1–C_6 alkoxy, benzyloxy, or acyloxy;

Y is chosen from the group:



R_2 is hydrogen, C_1–C_6 alkyl or C_2–C_6 alkenyl;

R_5 is hydrogen or C_1–C_6 alkyl;

n_1 and n_2, whether the same or different, are zero or an integer of 1 to 6,;

R_3 and R_4, whether the same or different, are hydrogen, C_1–C_6 alkyl or may form a

group with a carbon atom to which they are bound;

X is chosen from —O— or —S—;

R_6 is a substituent chosen from (a) C_1–C_4 alkyl, (b) a C_3–C_9 cycloalkyl, C_3–C_9 cycloalkenyl, norbornyl, or adamantyl radical each of which radicals may be substituted by one or more C_1–C_6 alkyl or C_1–C_6- alkoxy groups;

and a pharmaceutically or veterinarily acceptable salt thereof.

7. Method of inhibiting platelet aggregation in a patient in need of such inhibition, said method comprising administering to said patient a therapeutically effective amount of a compound of claim 1.

4,285,967

COSMETIC PREPARATION FOR REDUCING REDNESS OF BLEMISHES

Joseph Gubernick, Port Washington; Joseph Rosenstreich, Merrick, both of N.Y., and Lois A. Clapp, Hackensack, N.J., assignors to Estee Lauder Inc., New York, N.Y.

Continuation of Ser. No. 920,931, Jun. 30, 1978, abandoned. This application Feb. 4, 1980, Ser. No. 118,053

Int. Cl.³ A61K *31/135, 31/215*

U.S. Cl. 424—289 **19 Claims**

1. A cosmetic composition for reducing the redness of skin blemishes comprising from about 20 to 40 weight percent water and from 60 to 80 weight percent ethanol; from about 0.1 to about 1.0 weight percent of a phenylephrine hydrochloride vasoconstrictor; and from about 0.25 to 3.0 weight percent of an astringent selected from the group consisting of metallic astringent compounds and organic acids, all weight percents based on the total weight of the composition.

4,285,968

PESTICIDAL CONCENTRATE WITH STABILIZING AGENT

Wayne B. Rose, Merriam, Kans., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Filed Feb. 21, 1978, Ser. No. 879,187

Int. Cl.³ A01N *47/10*

U.S. Cl. 424—300 **4 Claims**

1. A pesticidal concentrate comprising o-isopropoxyphenyl methylcarbamate and citric acid or a salt thereof dissolved in a liquid water soluble dispersion medium selected from the group consisting of methanol, ethanol, isopropanol, dipropylene glycol monomethyl ether, and polyethylene glycol, the amount of the dispersion medium being sufficient to assure dissolution of substantially all of the carbamate at room temperature and, the amount of the citric acid or salt thereof being sufficient, when the concentrate is diluted to result in a pesticidally effective amount of the carbamate with water, to result in an aqueous solution having a pH of 7.0 or less.

4,285,969

PYRETHROIDS

Remo Galli, Dresano; Franco Gozzo, San Donato Milanese; Ottorino Palla, Crema, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

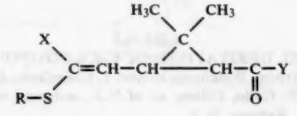
Filed Mar. 4, 1980, Ser. No. 127,118

Claims priority, application Italy, Mar. 9, 1979, 20853 A/79

Int. Cl.³ A01N *53/00;* **C07C** *61/35, 69/743, 121/75*

U.S. Cl. 424—304 **19 Claims**

1. Compounds of general formula:

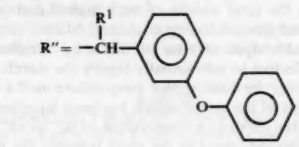


wherein:

R=C_1–C_4 alkyl

X=halogen

Y=OR″ and



wherein R^1=H or CN.

9. Method for fighting infestations by insects characterized in that an effective insecticidal amount of one or more of the compounds of claim 1 are applied as such or in the form of suitable compositions on the zone in which insect control is desired.

4,285,970

N-PHENETHYLAMINOPROPIOPHENONES AS LIPOGENESIS INHIBITORS

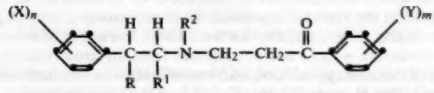
George R. Haynes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 115,467, Jan. 25, 1980. This application Jul. 21, 1980, Ser. No. 170,345

Int. Cl.³ A61K *31/275, 31/12*

U.S. Cl. 424—304 **1 Claim**

1. A method of inhibiting lipogenesis in a mammal, which comprises administering, to a mammal in need of such treatment, orally or parenterally a lipogenesis inhibiting amount of a compound of the formula:



wherein

R is hydrogen or hydroxyl;

R^1 is hydrogen or methyl;

R^2 is hydrogen or methyl;

n is zero, one or two;

X is hydroxyl, with the proviso that when n is one, the hydroxyl moiety is bonded to the carbon atom at the 4-position in the phenyl ring, and when n is two, the hydroxyl moieties are bonded to the carbon atoms in the 3- and 4-positions of the phenyl ring;

m is one;

Y is one of

nitro;

hydroxyl;

alkyl;

alkoxy;

alkylthio;

alkanoylamino;

alkenoylamino;

3-(dialkylamino)alkyleneoxy;

2-(dialkenylamino)alkyleneoxy, and their pharmacologically acceptable acid addition salts.

4,285,971

NOVEL HALOGENATED PHENOL ESTERS, ANTIMICROBIAL COMPOSITIONS CONTAINING THEM AND THEIR USE

Rene Muntwyler, Hofstetten, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

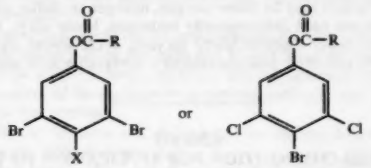
Filed Jul. 30, 1979, Ser. No. 62,192

Claims priority, application Switzerland, Aug. 8, 1978, 8473/78

Int. Cl.³ A01N *37/02, 37/06, 37/10*; **C07C** *69/76*

U.S. Cl. 424—308 **9 Claims**

1. A halogenated phenol ester of the formula



wherein X represents chlorine or fluorine and R represents hydrogen, alkyl of 1 to 22 carbon atoms, alkenyl of 2 to 22 carbon atoms, benzyl which is unsubstituted or substituted by chlorine or bromine atoms, or phenyl which is unsubstituted or substituted by 1 or more substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, carboxyl, chlorine and bromine.

7. An antimicrobial composition containing a microbiocidally effective amount of one or more of the phenol esters defined in claim and a carrier therefor 1.

4,285,972

METHOD OF TREATING SCOURS

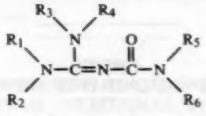
Billy J. Chou, Paoli; John Yelnosky, Warrington, and Richard L. Riley, North Wales, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Aug. 13, 1979, Ser. No. 65,982

Int. Cl.³ A61K *31/17, 31/155*

U.S. Cl. 424—326 **26 Claims**

1. A method of treating scours in calves, lambs, piglets or foals which comprises administering to the afflicted animal an effective amount of an anti-scouring agent of the formula:



wherein one of R_1 and R_5 is phenyl, phenyl in which one or more of the hydrogens is substituted by halo, lower alkyl, halo lower alkyl, nitro, lower alkoxy, hydroxy, aryl lower alkoxy, acyloxy, cyano, halo lower alkoxy, or lower alkyl sulfonyl; aralkyl, pyridyl, or pyridyl having one or more of the hydrogens replaced by lower alkyl, lower alkoxy, halo, halo lower alkyl, amino, nitro, hydroxy, cyano, carboxyl or lower alkyl sulfonyl; and the other of R_1 and R_5 is hydrogen, lower alkyl, lower alkoxy, lower alkenyl, cyclo lower alkenyl, cyclo lower alkyl, aralkyl, lower alkynyl, halo alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, cyano lower alkyl, amino lower alkyl, mono or di-lower alkyl amino lower alkyl, carbamoyl lower alkyl, mono or di-carbamoyl lower alkyl, lower alkoxy carbamoyl lower alkyl, aralkoxy carbamoyl lower alkyl, acyl lower alkyl, alkyl sulfonyl or aralkyl sulfonyl; R_2 and R_6 are each independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, lower alkenyl, cyclo lower alkenyl, cyclo lower alkyl, aralkyl, lower alkynyl, halo alkyl, hydroxy lower alkyl, lower alkoxy lower alkyl, cyano lower alkyl, amino lower alkyl, mono or di-lower alklyl amino lower alkyl, carbamoyl lower alkyl, mono or di-carbamoyl lower alkyl, lower alkoxy carbamoyl lower alkyl, aralkoxy carbamoyl lower alkyl, acyl lower alkyl, alkyl sulfonyl or aralkyl sulfonyl; and when R_1 is phenyl, phenyl substituted as above, aralkyl, pyridyl or pyridyl substituted as above, R_5 together with R_6 and the nitrogen to which R_5 and R_6 are attached may form a 5 or 6 membered heterocyclic ring which may include 0 to 2 additional hetero atoms which may be either oxygen, nitrogen or sulfur; and when R_5 is phenyl, phenyl substituted as above, R_1 and R_2 together with the nitrogen to which they are attached may be a 5 or 6 membered

heterocyclic ring which may include 0 to 2 additional hetero atoms which may be either oxygen, nitrogen or sulfur; and R_3 and R_4 are each independently hydrogen, lower alkyl, lower alkoxy, lower alkenyl, lower alkynyl, cyclo lower alkyl or aralkyl; and their pharmaceutically acceptable acid addition salts.

4,285,973

LIQUID COMPOSITION FOR APPLICATION TO THE SKIN

Diane B. Edwards, Carol Stream, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

Filed Jul. 20, 1979, Ser. No. 59,441
Int. Cl.³ A61K *7/48*
U.S. Cl. 424—358 **5 Claims**

1. A protective skin lotion composition in the form of an oil-in-water emulsion, the dispersed oil phase comprising an admixture of cosmetic emollient oils and forming from 5 to 35% by weight of said composition, the continuous water phase comprising from 95 to 65% by weight of said composition containing quaternary ammonium cellulose ether polymer in the amount of 0.05 to 3.0% based on the weight of said composition, wherein the improvement comprises increasing the skin retention of the cellulose polymer by also incorporating in said water phase from 0.3 to 3.0% of lactate salt based on the weight of said composition, said lactate salt being selected from the class consisting of sodium lactate, potassium lactate, and ammonium lactate, the pH of said water phase being in the range from 5.0 to 6.0, and incorporating in the oil phase from 0.5 to 4.0% of an oil-soluble quaternary ammonium salt based on the weight of said composition, said quaternary salt being selected from the class consisting of the chloride salt of a dimethyl di-aliphatic quaternary and the sulfate salt of a dimethyl di-aliphatic quaternary in which the aliphatic groups contain from 12 to 18 carbons.

4,285,974

INTAKE LIMITING LIQUID FEED SUPPLEMENT FOR CATTLE

Norman L. Betz, St. Louis, Mo.; Kent J. Lanter, Belleville, Ill., and Danny L. Williams, Manchester, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 930,787, Aug. 3, 1978, abandoned, which is a continuation-in-part of Ser. No. 849,741, Nov. 9, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 101,665
The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.
Int. Cl.³ A23K *1/02*
U.S. Cl. 426—2 **20 Claims**

1. An intake limiting liquid feed supplement for cattle containing an intake limiting composition, said feed supplement comprising a liquid carbohydrate medium, said intake limiting composition being present in an amount effective to limit intake of said supplement, consisting essentially of an acidulated unsaponified fat selected from the group consisting of coconut oil, corn oil, cottonseed oil, palm oil, palm kernel oil, soybean oil, tallow, and grease which has been acidulated at a temperature of at least about 220° F. with an acid.

4,285,975

PRODUCTION OF BREWER'S WORT

Paul R. Glenister, Chicago, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jan. 29, 1980, Ser. No. 116,574
Int. Cl.³ C12C *7/00, 9/00*
U.S. Cl. 426—29 **2 Claims**

1. A process for preparing brewer's wort which consists essentially of:

(a) forming at 82° to 88° C. an aqueous mash containing from 23 to 40 weight percent malted cereal and from 60 to 77 weight percent unmalted cereal, said weight percents based on the total weight of such malted and unmalted cereals, and also containing an amount of starch liquefying thermostable alpha amylase produced by *Bacillus licheniformis* effective to substantially liquify the starch;

(b) maintaining the mash at such temperature until a substantial amount of the cereal starch has been liquefied;

(c) cooling the mash to a temperature of 60° to 65° C.;

(d) adding malted cereal to the mash wherein the total unmalted and malted cereals added in steps (a) and (d) consist of 55 to 70 weight percent unmalted cereal and 30 to 45 weight percent malted cereal, said weight percents based on the initial total weight of such added cereals, and maintaining the resulting mixture at 60° to 65° C. until a substantial amount of the cereal starch has been saccharified;

(e) raising the temperature of the mash to a value from 72 to 76° C. and maintaining the mash at this temperature until the starch has been completely converted, and

(f) separating brewer's wort from the mash obtained from step (e).

4,285,976

METHOD FOR ACCELERATING AUTOLYSIS OF YEAST

Cavit Akin, and Rose M. Murphy, both of Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 23, 1979, Ser. No. 96,789
Int. Cl.³ A23L *1/28;* **A23J** *1/18;* **C12C** *11/34;* **C12N** *1/06*
U.S. Cl. 426—60 **13 Claims**

1. In a process for autolyzing yeasts wherein a yeast slurry is incubated at a temperature of from about 40° to about 60° C. to solubilize the yeast cell materials, the improvement comprising incubating the yeast slurry for from about 2 to about 16 hours in admixture with an additive selected from the group consisting of thiamine, pyridoxine, and a combination of thiamine and pyridoxine at a concentration of at least 0.01 weight percent.

4,285,977

PROCESS FOR PREPARING CARBONATED LIQUIDS

Milton Yezek, Clover, S.C., and Joan M. Adams, Fairview, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 10, 1979, Ser. No. 83,734
Int. Cl.³ A23L *2/00, 2/40*
U.S. Cl. 426—67 **8 Claims**

1. A method of carbonating water which comprises contacting water with carbonated ice initially at substantially normal atmospheric pressure in a closed pressure vessel, the carbonated ice containing at least 25 ml of carbon dioxide per gram of ice, the amount of carbonated ice being sufficient to create a superatmospheric pressure in said vessel and provide carbonated water containing at least three volumes of carbon dioxide.

4,285,978

METHOD FOR DECORATING BAKED GOODS AND THE LIKE

Sharon L. Quinlivan, 13302 Finsbury Ct., Laurel, Md. 20811

Continuation of Ser. No. 22,627, Mar. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 904,030, May 8, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 180,003
Int. Cl.³ A23G *3/28*
U.S. Cl. 426—87 **17 Claims**

1. An improved method of decorating baked goods prepared from uncooked dough, comprising the steps of:

providing a volume of relatively plastic uncooked unleavened dough having a smooth, generally planar upper surface and adapted, upon cooking, to form edible baked goods whose surfaces are neither flaky nor checked;

providing a transfer medium having a pre-printed design formed on at least one surface thereof by an edible, water-soluble ink;

applying the transfer to said upper surface of said dough;

supplying moisture to the transfer to cause the ink to leach out onto the surface of the dough; and
thereafter baking the dough;
whereby a baked good is produced bearing thereon a design corresponding to the design upon said transfer medium.

4,285,979

BREAD MAKING PROCESS AND PRODUCT THEREOF PARTICULARLY WELL SUITED FOR FREEZING AND REHEATING

Edmund F. Izzi, 8500 Magnolia Dr., Lanham, Md. 20801

Continuation-in-part of Ser. No. 910,892, May 30, 1978, abandoned. This application Jun. 3, 1980, Ser. No. 155,972
Int. Cl.³ A21D *6/00*
U.S. Cl. 426—94 **18 Claims**

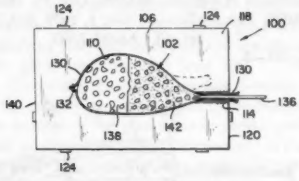
1. A method of making a bread product comprising the steps of:
a. preparing a bread dough;
b. forming the bread dough into a substantially flat sheet having two opposed planar major surfaces and a predetermined thickness between said major surfaces;
c. frying the dough sheet to only partially cook the same for a period of time sufficient to seal said surfaces but insufficient to permit substantial distortion of said planar major surfaces or to permit said dough sheet to separate internally thereof into different layers separated by air; and
d. baking the dough subsequent to frying to substantially complete the cooking thereof to obtain a cooked dough sheet with a crisp outer shell and a moist, bready interior and substantially the same shape as the originally formed dough sheet.

4,285,980

METHOD FOR PREPARING MOLDED POULTRY PRODUCT

Reuben Lewis, 105-52 Flatlands 7th St., Brooklyn, N.Y. 11236

Continuation-in-part of Ser. No. 33,132, Apr. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 885,516, Mar. 13, 1978, abandoned. This application May 30, 1980, Ser. No. 155,148
Int. Cl.³ B65D *81/34;* **A23L** *1/315*
U.S. Cl. 426—249 **6 Claims**



1. A method of producing a cooked poultry product comprising:
a. providing a flexible stretchable bag having a closed end and an open end and placing the closed end of the flexible stretchable bag within the internal contour of assembled and clamped sectional members of a mold, said internal contour forming a cavity the configuration of which is a whole cooked poultry product comprising a breast portion and leg portions the bag being positioned substantially within the cavity, said open end being disposed adjacent an access hole in the assembled mold;
b. placing the mold on an end disposed away from the access hole and inserting a filling tube into said flexible bag through said access hole in the assembled mold and into the open end of the bag;
c. pressing a first meat comprising a white meat through the filling tube at the open end of said bag so that the forced meat causes the bag to stretch so that a first portion of the bag contacts a first portion of the mold contour corresponding to and substantially filling the breast portion of the poultry;
d. pressing a second meat comprising a dark meat through the filling tube at the open end of said bag, onto the first meat, so that a second portion of the bag contacts a second portion of the mold contour corresponding to and filling the leg portions;
e. closing the open end of the bag after the bag is stretched to the mold contour; and
f. then heating the mold so as to cook the meat within the bag confined to the internal mold contour, further comprising retaining the stretched and filled bag in the mold during heating so that the final form is set prior to opening the mold, and expansion of the meat in the bag due to cooking causes the meat to more completely take the form of the internal contour of the mold, whereby the cooked meat is in the form of a whole cooked poultry with the white meat in the breast portion and the dark meat in the leg portion.

4,285,981

LIQUID SEASONING COMPOSITIONS III

Paul H. Todd, Jr., and Howard E. Haley, both of Kalamazoo, Mich., assignors to Kalsec, Inc., Kalamazoo, Mich.

Filed Feb. 28, 1980, Ser. No. 125,425
Int. Cl.³ A23L *1/221*
U.S. Cl. 426—250 **17 Claims**

1. A homogeneous liquid condimental composition, useful in flavoring or coloring foods and beverages and which is dispersible in both oil and water, consisting essentially of
(1) lecithin,
(2) tartaric acid esters of mono- and diglycerides, and
(3) one or more condiments selected from edible flavorings and edible colorings, the ratio by weight of (1) plus (2) to (3) being at least 1:4.

4,285,982

PROCESS FOR ENHANCING THE SUNLIGHT STABILITY OF ANTHOCYANIC PIGMENTS

Guillermo A. Iacobucci, and James G. Sweeny, both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation of Ser. No. 70,971, Aug. 30, 1979, abandoned. This application Mar. 10, 1980, Ser. No. 128,463
Int. Cl.³ A23L *1/272*
U.S. Cl. 426—250 **27 Claims**

1. A process for the production of a photostable anthocyanic colorant composition comprising combining an anthocyanic pigment and a photoprotective agent selected from the group consisting of sulfonated polyhydroxyflavonols, poly(hydroxyalkyl)flavonols, sulfonated polyhydroxyflavones, sulfonated polyhydroxyiso-flavones, and sulfonated aurones, the molar ratio of said photoprotective agent to said anthocyanic pigment being not less than 1:1.

4,285,983

FIXING VOLATILE FLAVORING AGENT IN STARCH HYDROLYSATE

Albert V. Saldarini, Nutley, and Robert Doerig, Fort Lee, both of N.J., assignors to Norda, Incorporated, East Hanover, N.J.

Filed May 2, 1979, Ser. No. 35,349
Int. Cl.³ A23L *1/226, 1/222*
U.S. Cl. 426—534 **9 Claims**

1. A process for fixing a volatile flavoring agent selected from at least one member of the group consisting of acetaldehyde and an essential oil in a carrier matrix material of starch hydrolysates having a dextrose equivalent not greater than about 28 to impart a dry free flowing particulate configuration to said carrier fixed flavoring agent comprising:
(a) providing an aqueous liquid containing said flavoring agent wherein when said flavoring agent comprises acetal-

dehyde said acetaldehyde is dissolved in water and when said flavoring agent comprises an essential oil said essential oil is emulsified as a discontinuous phase in said water, with said water in said aqueous liquid being present in an amount sufficient to dissolve the carrier material when converted to a droplet configuration and contacted with said carrier material while in particulate form at a temperature at which the process is conducted and wherein the viscosity of said aqueous liquid is not greater than about 200 cps at the temperature at which the process is conducted,

(b) impinging droplets of said aqueous liquid containing said flavoring agent onto the surface of a bed of free flowing carrier particles whereby a portion of the carrier particles is dissolved into the aqueous portion of said aqueous liquid to form a saturated solution of the carrier material in said droplets and in a manner sufficient to substantially avoid the coalescence of the droplets,

(c) allowing a portion of the water contained in the saturated droplets to evaporate thereby forming a continuous film of the carrier material on the surface of said droplets,

(d) separating the resulting filmed droplets from the carrier particles after said filmed droplets have set to a particulate form which is maintained when contacted with similar filmed droplets and before the remainder of the water present therein passes through the droplet film surface to the extent that the carrier particles remaining in the carrier bed are wet thereby and caused to agglomerate, and

(e) drying the separated filmed droplets to allow the remainder of the water present therein to preferentially pass through the film surface.

4,285,984

FLAVORING WITH DIALKYLAMINO-ALKYLENE MERCAPTANS AND SULFIDES

Ulrich Huber, Zurich, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

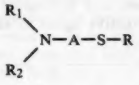
Continuation of Ser. No. 821,128, Aug. 2, 1977, abandoned. This application Jun. 4, 1979, Ser. No. 45,523

Claims priority, application Austria, Aug. 9, 1976, 5900/76; Switzerland, Jun. 17, 1977, 7462/77

Int. Cl.³ A23L *1/226, 1/231*

U.S. Cl. 426—535 **16 Claims**

1. A flavoring composition for foodstuffs containing from about 1 ppm to about 10 percent of at least one virtually pure compound having the formula

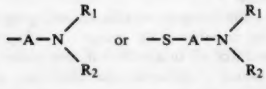


wherein:

R_1 and R_2 each represent a C_{1-3} alkyl group,

A represents an alkylene group of from one to four carbons

R represents hydrogen, methyl, ethyl, formyl, acetyl propionyl or a group of the formula



to impart a roast, meat, cheese, fish, poultry, vegetable-like, or mushroom-like taste, and at least one other compatible flavoring agent.

4,285,985

PROCESS FOR ENHANCING THE SUNLIGHT STABILITY OF RUBROLONE

Guillermo A. Iacobucci, and James G. Sweeny, both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Mar. 25, 1980, Ser. No. 133,676

Int. Cl.³ A23L *1/272*

U.S. Cl. 426—540 **13 Claims**

1. A pigment composition comprising rubrolone and quercetin-5′-sulfonate.

4,285,986

OLIGOPEPTIDES DERIVED FROM COLLAGEN

Gheorghe Cioca, Belleview, and Marcel Siegler, North Bergen, both of N.J., assignors to Seton Company, Newark, N.J.

Filed Jan. 21, 1980, Ser. No. 113,694

Int. Cl.³ A23J *1/10*

U.S. Cl. 426—657 **7 Claims**

1. A method of preparing oligopeptides from collagen comprising:

treating natural insoluble collagen with an aqueous solution of a member selected from the group consisting of a mixture of an alkali earth metal hydroxide and an alkali metal hydroxide; and an alkali metal hydroxide in the presence of an agent which prevents overswelling of the collagen, said treatment removing substantially all of the hair and fat from the collagen;

removing non-collagenous material by treating the dehaired and defatted collagen with an aqueous solution of a solvent for said non-collagenous material;

neutralizing the collagen;

removing residual salts from said collagen;

heating the collagen under pressure in the presence of water to hydrolyze polypeptide chains to form oligopeptides; and

recovering substantially pure oligopeptides having a molecular weight between about 5,000 and 20,000.

4,285,987

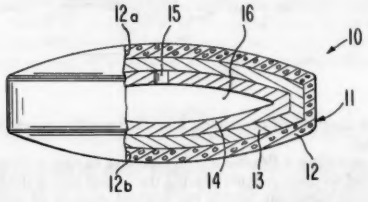
PROCESS FOR MANUFACTURING DEVICE WITH DISPERSION ZONE

Atul D. Ayer, Mountain View, and Felix Theeuwes, Los Altos, both of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 953,906, Oct. 23, 1978, Pat. No. 4,200,098. This application Nov. 1, 1979, Ser. No. 90,492

Int. Cl.³ A61M *7/00*

U.S. Cl. 427—3 **15 Claims**



1. A process for manufacturing a drug delivery device, which process comprises the steps of:

(a) pressing a drug formulation into a shaped, solid mass;

(b) coating the mass with a composition comprising a semipermeable polymer permeable to the passage of fluid and impermeable to the passage of drug to form a semipermeable wall surrounding a compartment housing the formulation;

(c) drilling an outlet passageway in the semipermeable wall of a predetermined size for osmotically pumping the formulation through the passageway;

(d) coating the semipermeable wall with a layer of a member

soluble in fluid that enters the device and is selected from the group consisting of a salt, a carbohydrate, and mixtures thereof, which layer separates the semipermeable wall from a microporous wall, said microporous wall formed by;

(e) coating the layer with a composition comprising a microporous polymer to form a microporous wall surrounding the layer, thereby forming the device.

4,285,988

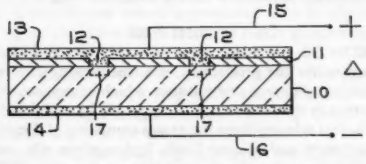
STAINED GLASS PHOTOMASKS AND METHOD OF MAKING BY ELECTRODEALKALIZATION

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 856,144, Nov. 30, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,422

Int. Cl.³ B05D *5/12, 1/36*

U.S. Cl. 427—12 **11 Claims**



1. A method for making a stained glass photomask comprising the steps of:

applying a nonconductive masking film of organic photoresist onto a surface of a glass substrate containing alkali ions;

photographically exposing and developing the photoresist masking film, thereby producing a pattern of apertures through the masking film;

imposing a direct current electric field across the glass substrate and the apertured masking film in a direction substantially normal to said surface of the glass substrate, with the masking film side as anode, and simultaneously heating the glass substrate to at least 100° C., thereby migrating alkali metal ions out of surface portions of the glass directly underlying the apertures in the masking film toward the interior of the glass so as to yield a pattern of alkali metal on depleted areas at said surface of the glass substrate, while the masking film maintains the alkali metal ion content essentially unchanged in the remaining surface portions of the glass substrate lying directly thereunder;

removing the masking film from said surface of the glass substrate;

bringing a source of stain-producing cations into contact with said surface of the glass substrate under ion migrating conditions, thereby migrating the stain-producing cations into said remaining surface portions of the glass substrate, and insubstantial migration of the stain-producing ions occurs in said alkali metal ion depleted surface portions; and

heating the glass substrate in the presence of a reducing agent to reduce and agglomerate the migrated stain-producing cations within the glass, thereby rendering the stain-producing cation migrated surface portions of the glass substantially opaque to radiation of a given wave length while said alkali metal ion depleted surface portions remain substantially transparent to said radiation.

4,285,989

ELECTROGRAPHIC RECORDING MATERIAL, METHOD OF MAKING AND USING

Walter J. Wilkinson, Wilbraham, and Irving Serlin, Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed May 11, 1979, Ser. No. 38,049

Int. Cl.³ B05D *1/04*

U.S. Cl. 427—14.1 **12 Claims**

12. A method of electrographic recording comprising forming an electrostatic charge pattern on an electrically insulating layer of an electrographic recording medium developing the charge pattern by application of a toner and fixing the toner by heat or pressure, wherein the electrically insulating layer comprises an intimate blend of a polymeric binder and up to 500 parts by weight of a finely divided pigment per 100 parts by weight of polymeric binder, wherein the polymeric binder comprises from about 50 to about 95 parts by weight of a poly(vinyl acetal), from about 5 to about 50 parts by weight of an alkoxymethyl polyaminotriazine and from about 0 to about 30 parts by weight of an oligomer of styrene or α-methylstyrene of molecular weight in the range of about 300 to about 500.

4,285,990

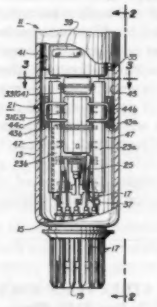
METHOD FOR COATING A SELECTED PORTION OF THE INTERNAL NECK SURFACE OF A CRT

Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 25, 1980, Ser. No. 172,220

Int. Cl.³ H01J *29/00*

U.S. Cl. 427—39 **9 Claims**



1. A method for coating a selected portion of the internal surface of the neck of a CRT, said neck housing an electron-gun assembly including at least two electrically-insulating support rods, each of said rods having a rod surface that is opposite and closely spaced from said internal neck surface, each of said rod surfaces and the rod-opposed neck surface that is opposite thereto defining a bead channel, said method comprising

(a) providing in said neck at least one source of chromium metal for each of said bead channels, each source being spaced from and within line-of-sight of at least a portion of the rod-opposed neck surface defining said channel,

(b) evacuating said CRT to a low gas pressure,

(c) and then releasing chromium metal vapor from said source into said bead channel towards said rod-opposed neck surface; whereby chromium metal deposits as a layer on said rod-opposed neck surface.

4,285,991
METHOD FOR PRODUCING PRINTED CIRCUITS

Klaus Gedrat; Hans-Jürgen Ehrich; Hartmut Mahlkow, and Joachim Wolff, all of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 150,174

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920940

Int. Cl.[3] **B05D** *5/12;* **C23F** *1/02*

U.S. Cl. 427—97 **17 Claims**

1. A method of producing printed circuits of the type wherein basis material is coated with copper which material is drilled, purified, activated, reduced and after-treated, wherein the circuit image is applied by printing the copper with a resist after covering of all areas not belonging to the circuit intended to be produced, wherein the improvement comprises covering the exposed copper of the so-pretreated basis material with a layer of metal selected from the group consisting of nickel, cobalt and nickel-cobalt through treatment with a chemical bath of said metal; removing the resist; etching the copper exposed by removal of the resist; covering the circuit image negatively with a solder prevention lacquer but leaving the soldering eyes and bore holes exposed; and providing the exposed eyes and bore holes with a copper layer though treatment with a chemical copper bath.

4,285,992
PROCESS FOR PREPARING IMPROVED SILVERED GLASS MIRRORS

Charles Q. Buckwalter, Jr., Benton, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1980, Ser. No. 115,868

Int. Cl.[3] **B05D** *1/36, 1/34;* **C03C** *17/38;* **G02B** *5/08*

U.S. Cl. 427—165 **7 Claims**

1. In the method for preparing silvered mirrors of glass, wherein one surface of the glass is scrubbed with a slurry of an abrasive to clean the surface, a solution of a soluble compound of tin or palladium is applied to the cleaned surface to sensitize the glass, and the sensitized surface is contacted simultaneously with a solution of a soluble silver compound and one or more solutions of caustic and reducer which together with the silver solution react to precipitate a layer of silver on the sensitized surface of the glass, a layer of copper is applied over the layer of silver, and a layer of paint is applied over the layer of copper, the improvement which comprises applying a solution of a soluble compound of lanthanide rare earth ions to the cleaned surface of the glass before the silver is precipitated on the sensitized surface whereby the layer of silver has increased resistance to delamination from the surface of the glass in the presence of moisture.

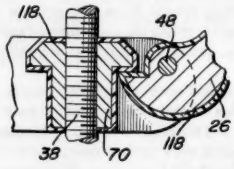
4,285,993
ANTI-CORROSIVE STRUCTURE ANCHOR ASSEMBLY

John H. Green, Sr., P.O. Box 1146, Crane, Tex. 79731

Filed Mar. 30, 1979, Ser. No. 25,593

Int. Cl.[3] **B05D** *3/02;* **E21D** *20/00;* **E02D** *5/74*

U.S. Cl. 427—195 **9 Claims**



1. A method for protecting an earth anchor system from electrolytic oxidative corrosion, said anchor system including a fastening means for anchoring attachment of an above-ground structure and an anchoring means attached to the fastening means for gripping retention below ground level of said fastening means, the method including the steps of:

removing all oil, grease and loosely adhering deposits from said anchor means;

blast cleaning said anchor means with an abrasive material;

heating said anchor means to a temperature of approximately 400° F.;

applying a fusion-bondable one-part heat curable dihydrazide cured, thermosetting powdered epoxy coating to said anchor means;

curing said powdered epoxy at a temperature of approximately 400° F.; and

cooling said anchor means to room temperature.

4,285,994
PROCESS FOR PRODUCTION OF FREE FLOWING DUST-FREE PIGMENTS

Roy W. J. Pearce, Newcastle; John Carbert, Stoke-on-Trent, and John P. K. MacDonald, Newcastle, all of England, assignors to Johnson, Matthey & Co., Limited, London, England

Continuation of Ser. No. 934,091, Aug. 15, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 165,643

Claims priority, application United Kingdom, Aug. 17, 1977, 34543/77

Int. Cl.[3] **B05D** *7/00*

U.S. Cl. 427—222 **2 Claims**

1. A process for the production of a free-flowing and relatively dust-free pigment composition which comprises tumbling together in the presence of of up to 5% by weight of an oil or surfactant selected from the group consisting of dimethyl siloxane polymers and silicone fluids, hydrocarbon oils, polyethylene glycols with molecular weights ranging from 200 to 400 and compounds formed by the esterification of a primary alcohol with a fatty acid ranging from C_3 to C_{20} and having a viscosity between 1.0 and 30,000 centistokes (1) a finely divided spray chilled polymeric wax binder consisting essentially of substantially spherical particles of polymer selected from the group consisting of polyolefin, polyvinyl chloride, polyvinyl acetate, polyacrylonitrile, polystyrene, polymethylmethacrylate, polybutadiene and copolymers thereof having a particle size distribution within the range 50–5000 microns diameter and (2) a powdered pigment present in an amount between 70 and 95% by weight, continuing the tumbling for a time sufficient for substantially all of the pigment to be coated onto or to be absorbed by the polymeric wax binder as substrate to form substantially spherical particles ranging in size from 0.2 mm up to 5.0 mm in diameter.

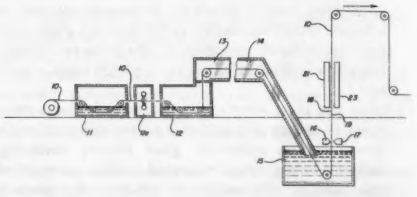
4,285,995
PROCESS FOR INCREASING ALLOYING RATE OF GALVANIZED COATING ON STEEL

David W. Gomersall, Valparaiso, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Mar. 10, 1980, Ser. No. 128,649

Int. Cl.[3] **C23C** *1/02*

U.S. Cl. 427—383.9 **16 Claims**



1. A process of forming a zinc-iron alloy coating on at least

one lateral surface of a ferrous metal strip which comprises; applying a coating of metallic copper to at least one lateral surface of a clean ferrous metal strip, heating the strip in a non-oxidizing atmosphere to a temperature sufficient to effect diffusion of a portion of said copper coating into said strip while leaving a surface film of metallic copper on said one lateral surface, applying a coating of metallic zinc over at least said film of metallic copper, and heating said strip to transform said zinc coating on at least said one lateral surface into a zinc-iron alloy coating free of unalloyed metallic zinc in the surface thereof.

4,285,996

POLYOXYALKYL AMINE-POLYISOCYARATE REACTION PRODUCTS AS COAGULATION AGENTS FOR BINDING AGENT DISPERSIONS

Hans Gerber, Strengigässli, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 940,069, Sep. 5, 1978, abandoned. This application Jun. 7, 1979, Ser. No. 46,478

Claims priority, application Switzerland, Sep. 6, 1977, 10851/77

Int. Cl.³ C08G *71/04;* C08L *75/08*

U.S. Cl. 427—389.9 **43 Claims**

1. In a process for producing a non-woven fabric wherein a non-woven fibrous web is impregnated with an aqueous binding agent dispersion suitable for use in the production of non-woven fabrics and containing a non-ionic and/or an anionic dispersing agent and a coagulation agent, the improvement which comprises employing as the coagulation agent a polyurethane having a weight average molecular weight from 500 to 20,000 which is the reaction product of

(i) a polyoxyalkylated aliphatic amine containing d nitrogen atoms, where d is 1 to 5, and where d is greater than 1, each nitrogen atom is connected with the next by a (C_2-4)alkylene moiety and from d+1 to d+2 polyoxy(C_2-4)alkylene units, with the proviso that the molecule contains C_2 oxyalkylene units and C_3 and/or C_4 oxyalkylene units with the C_3 and/or C_4 units forming the majority of oxyalkylene units, and with the further proviso that when the number of polyoxyalkylene units is d+1, the other group bound to a nitrogen atom is a (C_1-6) alkyl group, and

(ii) from 0.1 mols to 2 mols per mol of (i) but not exceeding the stoichiometric amount of a polyisocyanate,

which reaction product is optionally in quaternized form and, is present in an amount of from 0.5 to 50 parts by weight per 100 parts of binder solids, followed by drying the web.

4,285,997

WOOD STABILIZING/TREATING COMPOSITIONS AND METHOD

Ramesh C. Vasishth, Danville, Calif., and Dodwell P. De Silva, Vancouver, Canada, assignors to Envirosol Systems International, Ltd., Orinda, Calif.

Filed Nov. 5, 1979, Ser. No. 91,029

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—393 **15 Claims**

1. A method for treating wood to enhance its properties comprising: contacting the wood to be treated with sufficient water dilutable resin formed from at least one vinyl monomer in a solvent consisting essentially of water to deposit an effective amount of said resin in the cell walls of said wood, said resin containing molecules having a molecular weight of less than about 1000 and of a size which can enter the free space in said cell walls in the presence of said solvent in an amount sufficient to stabilize the wood, and having a minimum film forming temperature not greater than ambient, and converting the resin in said cell walls to a water insoluble form at ambient conditions.

4,285,998

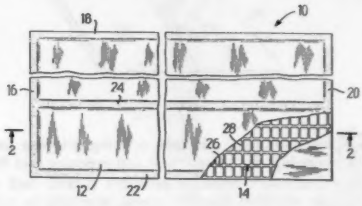
REINFORCED THERMOPLASTIC FILM SHEET

Raymond J. Thibodeau, Wayzata, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Continuation of Ser. No. 708,338, Jul. 26, 1976, abandoned. This application May 3, 1978, Ser. No. 902,490

Int. Cl.³ B32B *1/04, 3/10*

U.S. Cl. 428—35 **13 Claims**



1. A bag capable of withstanding stresses over a period of at least about 4 months encountered in being stacked five pallets high with a height of five bags per pallet when each said bag contains 50 pounds of granular material, the walls of said bag being composed of a sandwich construction comprising:

(a) inner and outer layers of a polyethylene film each said film having an elongation of at least about 200%;

(b) a substantially flat plastic net-like structure intermediate said inner and outer walls, said structure;

(i) having been formed by extruding a first set of space parallel longitudinal strands interconnected by a second set of spaced, parallel transverse strands extruded integral with said longitudinal strands, the first and second sets of strands meeting at substantially right angles;

(ii) the extruded structure having been biaxially oriented by heating it and stretching it;

(iii) weighing from about ½ pound per thousand square feet to about 3 pounds per thousand square feet;

(iv) having an elongation of less than about 50%;

(v) being of substantially uniform cross-section throughout both the strands and the joints thereof;

(c) portions of said inner and outer layers being bonded to each other along selected strips by heat sealing, one of said selected strips being an end seam;

(d) one said set of strands being aligned substantially parallel with said end seam and the other said set of strands being aligned substantially perpendicular thereto;

(e) other portions of said inner and outer layers being unbonded to each other over a continuous area of a plurality of strands of each said set of strands; whereby said structure is free to move with respect to said inner and outer layers in the unbonded area.

4,285,999

METHOD AND APPARATUS INVOLVING ADHESIVE BACKED PHOTOGRAPHS

Anthony Olivieri, 23 Quaker La., Dedham, Mass. 02026, and Anthony Macrina, 47 Henry Ave., Melrose, Mass. 02176

Division of Ser. No. 871,784, Jan. 24, 1978, Pat. No. 4,201,613. This application Dec. 10, 1979, Ser. No. 102,245

Int. Cl.³ A61F *13/02*

U.S. Cl. 428—40 **10 Claims**

1. An adhesive backed photographic print comprising:

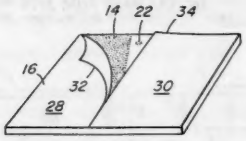
(a) a processed photographic print having finished and unfinished surfaces on opposite faces;

(b) first pressure sensitive adhesive means on certain areas of said unfinished surface, the remaining area of said unfinished surface being free of adhesive;

(c) second pressure sensitive adhesive means in said adhesive free area on said unfinished surface, said second pressure

sensitive adhesive means isolated from said first pressure sensitive adhesive means;

(d) a release web superposed on said first and second pressure sensitive adhesive means and on said adhesive free area, said release web having a pair of tabs adjacent said



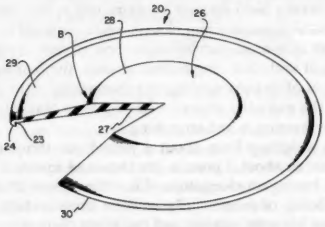
adhesive free area, said tabs defining gripping members for removing said release web and exposing said first and second pressure sensitive adhesive means, said second pressure sensitive adhesive means operative to hold said release web flat against said adhesive free area.

4,286,000

PLASTIC PREFORM

John F. Dye, Muncie, and Earl L. Lowe, Winchester, both of Ind., assignors to Ball Corporation, Muncie, Ind.

Filed Oct. 25, 1979, Ser. No. 88,229
Int. Cl.³ B32B *3/02, 1/04;* **B29C** *23/00*
U.S. Cl. 428—64 **11 Claims**



1. An oriented polymeric preform for making an open mouth container comprising a base defined by an inner circular portion having a predetermined radius and an outer circular portion situated parallel to said inner circular portion and spaced therefrom, said outer portion having a greater radius than said inner portion, an outwardly extending annular member integral with said base and tapering therefrom, said member having a thickness adjacent the circumference of said inner and outer circular portions which is substantially greater than any other portion of the preform so as to offer a reservoir of polymeric material, said annular member forming an angle of inclination with said outer circular portion of between about 2° to about 30°, and a flange integral with the annular member and extending radially outwardly and having a cross-section configuration of substantially the rim of the finished container.

4,286,001

PROCESS FOR THE PRODUCTION OF INDUSTRIAL PARTS OF SYNTHETIC MATERIAL COMPRISING A RIGID PORTION SURMOUNTED BY A FLEXIBLE PORTION AND THE INDUSTRIAL PART PRODUCED BY SAID PROCESS

Giuliano Frau, Mareil sur Mauldre, France, assignor to Les Manufactures de Saint Marcel, France

Filed Nov. 13, 1979, Ser. No. 93,069
Claims priority, application France, Sep. 27, 1979, 79 24118
Int. Cl.³ B32B *3/02, 3/04*
U.S. Cl. 428—68 **10 Claims**

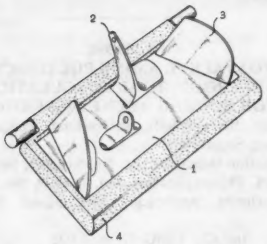
1. Process for production of an industrial component which comprises a portion of rigid material partly surrounded by a portion of flexible material, including the steps of:

making a model of said rigid portion;

producing a first mould from said model;

adding to the model additional material shaped and dimensioned to correspond to the shape and dimension of said flexible portion;

producing a second mould from said model with said additional material thereon;



placing said first mould in an injection moulding machine and injecting material to produce said rigid portion;

removing said rigid portion from said first mould;

inserting said rigid portion in said second mould;

placing said second mould with said rigid portion inserted therein in a casting machine; and

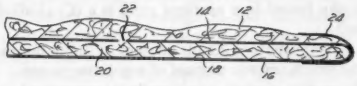
casting flexible material and uniting it to said rigid portion to produce said industrial component.

4,286,002

URINATION COLLECTION PAD

Sylvia Y. Strong, 5434 Hillcrest Dr., Los Angeles, Calif. 90043

Filed Nov. 29, 1979, Ser. No. 98,474
Int. Cl.³ B32B *29/00*
U.S. Cl. 428—74 **2 Claims**



1. A urination collection pad designed to be used by bed ridden individuals, said pad adapted to be located between the buttock area of the individual and the mattress of the bed, said pad comprising:

a bottom layer adapted to be located against the mattress, said bottom layer being non-liquid permeable;

a liquid absorbent layer located on said bottom layer, said liquid absorbent layer comprising shredded paper;

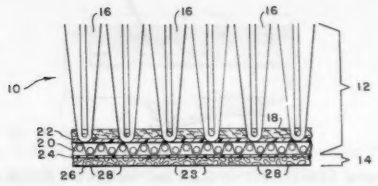
an encasing layer of material located against said liquid absorbent layer on the side opposite said bottom layer, said encasing layer being attached to said bottom layer and located about the periphery of said liquid absorbent layer, said encasing layer permitting passage of liquid therethrough; and

a soft resilient layer of material attached upon said encasing layer and substantially covering such, said soft resilient layer being secured to said encasing layer by means of an overlapping flange, said overlapping flange binding together the periphery of said soft resilient layer and the periphery of said encasing layer and the periphery of said bottom layer, said soft resilient layer of material comprising quilted cloth, whereby said soft resilient layer is to be in direct contact with the individual's skin to facilitate comfortable contact therewith.

4,286,003
THIN POLYURETHANE FOAM BACKED RUG

Kenneth B. Higgins, LaGrange, Ga., and Edgar H. Pittman, Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 952,518, Oct. 18, 1978, abandoned.
This application Dec. 3, 1979, Ser. No. 99,975
Int. Cl.³ B32B 3/02, 33/00
U.S. Cl. 428—95 3 Claims



1. An area rug comprising: a carpet layer and a thin open-cell polyurethane material bonded to said carpet layer by an adhesive, said open-cell polyurethane material being of from 0.02 inches in thickness to 0.040 inches in thickness with a density of 1.75±0.30 pounds per cubic foot, said open-cell polyurethane having 70–45 pores per square inch and when slit having a plurality of substantially semicircular openings in the side thereof away from the pile surface of said carpet layer, said thin open-cell polyurethane material having a thickness of no more than 10% of the thickness of said carpet layer.

4,286,004
ANTISTATIC POLYURETHANE FOAMS AND CARPET BACKINGS MADE THEREFROM

Kurt Dahmen, Mönchen-Gladbach, and Siegfried Pfabe, Geldern, both of Fed. Rep. of Germany, assignors to Chemische Fabrik, Stockhausen, Fed. Rep. of Germany

Filed May 7, 1980, Ser. No. 147,694
Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2919975
Int. Cl.³ C08G 18/14; B32B 27/18, 27/40
U.S. Cl. 428—95 15 Claims

1. A process for rendering antistatic polyurethane foams comprising incorporating in the foam in amounts of about 5–30 weight % based on the polyurethane an antistatic agent of the formula

$$R—(RHR'—CH_2O)n—CHR'—CH_2R''$$

in which R and R'' each indepentently is a linear or branched alkoxy radical with 1 to 22 carbon atoms, an alkaryloxy radical with 10 to 18 carbon atoms, an aliphatic acyloxy radical with 1 to 18 carbon atoms, or a halogen radical, R' is hydrogen or a methyl radical, and n is a whole number from 2 to 20.

8. A polyurethane foam containing as an antistatic additive a terminally esterified or etherified polyalkylene oxide adduct of the general formula

$$R—(CHR'—CH_2O)n—CHR'—CH_2R''$$

in which

R and R'' each independently is a linear or branched alkoxy radical with 1 to 22 carbon atoms, an alkaryloxy radical with 10 to 18 carbon atoms, an acyloxy radical with 1 to 18 carbon atoms, or a halogen radical,

R' is hydrogen or a methyl radical, and

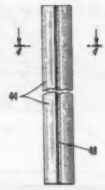
n is a whole number from 2 to 20.

10. A polyurethane foam according to claim 8, wherein the antistatic additive is present in about 10 to 20 weight % based on the polyurethane.

4,286,005
INK RESERVOIR ELEMENT FOR USE IN A MARKING INSTRUMENT, AND METHOD AND APPARATUS FOR PRODUCING SAME

Richard M. Berger, Midlothian, Va., assignor to American Filtrona Corporation, Richmond, Va.

Filed Mar. 5, 1979, Ser. No. 17,106
Int. Cl.³ B32B 3/30; B43K 5/02
U.S. Cl. 428—167 6 Claims

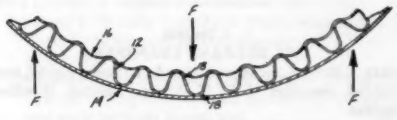


1. An ink reservoir element for use in a marking instrument, comprising a coherent sheet of flexible thermoplastic fibrous material compatible with formic acid compacted together and bonded into a dimensionally stable rod-shaped body, said fibrous material being composed of an interconnecting network of randomly arranged, highly dispersed, continuous-filament thermoplastic fibers which are bonded together at the filament junction; at least one surface of said sheet being uniformly embossed with a series of parallel grooves extending longitudinally with respect to said rod-shaped body, forming capillaries capable of transporting ink which extend longitudinally from end to end of the finished element.

4,286,006
CORRUGATED MATERIAL

Lester B. Boelter, Edina, Minn., assignor to Boelter Industries, Inc., Winona, Minn.

Filed Jan. 26, 1977, Ser. No. 762,410
Int. Cl.³ B32B 3/28, 29/00
U.S. Cl. 428—182 12 Claims



1. A corrugated packaging material comprising, in combination:

(a) a layer of single faced corrugated board including

(i) a fluted medium having a plurality of upper presented surfaces alternating with a plurality of upper spans, and a plurality of lower presented surfaces alternating with a plurality of lower spans, said alternating presented surfaces and spans defining a plurality of flutes extending parallel to each other, and

(ii) a first facing affixed to said medium along each lower presented surface; and

(b) a second facing affixed to said medium along each upper presented surface, said second facing being substantially non-extensible in a direction transverse to the direction in which said flutes run; wherein

(c) said first facing has a much greater ability to transmit compressive forces across a spanning length thereof without buckling than said second facing.

4,286,007
REPAIR PATCH FOR CONTAINER AND LORRY SHEETS

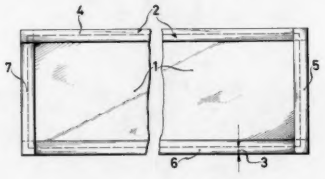
Willi Oellerking, Schleswig, Fed. Rep. of Germany, assignor to Schleswiger Tauwerkfabrik Christian Oellerking, Schleswig, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,251

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807439

Int. Cl.³ B32B *3/06, 35/00*

U.S. Cl. 428—194 **4 Claims**



1. A repair patch for use in repairing damaged areas in protective cover sheets for loading openings of containers, lorries, or the like utilized in international goods transportation wherein, to satisfy customs regulations, a sealing strip must be attached around the periphery of the patch and overlapping the patch and the cover sheet and embossed with a relief pattern so that once the patch has been applied to the cover sheet, any tampering with the patch will be readily discoverable, said repair patch comprising:

a piece of fabric having outer and inner surfaces and peripheral edges defining an area of predetermined size and shape for covering the damaged area in the cover sheet;

a coating of a weldable plastic material on at least the inner surface of said piece of fabric for welding the fabric to the cover sheet over the damaged area; and

an elongate sealing strip of an embossable, weldable thermoplastic material connected to the outer surface of said piece of fabric and extending around the periphery thereof, with portions of the sealing strip projecting outwardly beyond said peripheral edges of the fabric to form a circumferential outwardly projecting margin for welding to the cover sheet when the piece of fabric is positioned over the damaged area of the cover sheet and said weldable coating is secured to the cover sheet.

4,286,008
DRY RELEASE TRANSFERS

Kenneth J. Reed, London, and Alan L. Lythgoe, Hythe, both of England, assignors to E. T. Marler Limited, Wimbledon, England

Filed Jul. 19, 1978, Ser. No. 926,077

Claims priority, application United Kingdom, Jul. 20, 1977, 30430/77

Int. Cl.³ B32B *3/00, 27/14*

U.S. Cl. 428—195 **21 Claims**

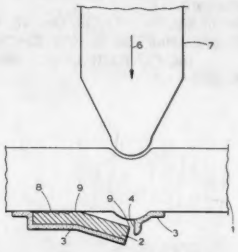
1. A dry release transfer which comprises:

(a) a flexible light-transmitting carrier sheet,

(b) a design layer releasably adhered thereto, said design layer comprising a flexible solid cross-linked polymer produced by photopolymerisation of a viscous liquid ink containing not more than 20% of volatile solvent printed on the carrier sheet,

(c) said ink prior to photopolymerisation consisting essentially of one or more ethylenically unsaturated monomers and prepolymers containing pendant or terminal acryloyl or methacryloyl groups,

(d) said photopolymerisation having been effected by exposure of the entire liquid ink layer to actinic radiation, whereby the liquid layer is rapidly converted to a flexible cross-linked solid design layer, said design layer possessing stress-resisting properties which resist deformation by a mechanical disrupting force, such as a stylus, applied to the carrier sheet and enables the design layer to be released from the carrier sheet and enables the design layer to be released from the carrier sheet without fracturing the design layer.



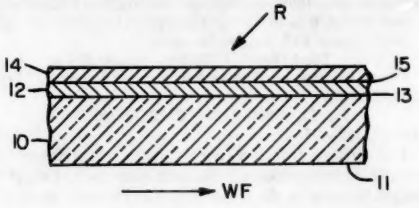
4,286,009
COMPOSITE SOLAR ABSORBER COATINGS

Edward M. Griest, Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 878,225, Feb. 16, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,902

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—212 **7 Claims**



1. A composite coating for a solar collector absorber wherein solar radiation impinges on one surface of the absorber, and said absorber is adapted to transfer energy so received from the impinging solar radiation in the form of sensible heat to a working fluid in communication with a delivery surface of the absorber comprising;

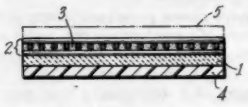
a smooth surface absorber substrate;

a first coating of solar radiation absorbing metal oxides, said metal oxides selected from a group consisting of antimony doped tin oxide, tin doped indium oxide and iron oxide; and a second coating of infrared radiation reflecting metal oxides, said second coating metal oxides selected from a group consisting of antimony doped tin oxide, fluorine doped tin oxide and tin doped indium oxide, said first and second coatings being deposited so as to form a composite on at least one of the other and the substrate in an order of deposition such that the first coating lies in back of the second coating with respect to impinging solar radiation such that the composite exhibits an absorptivity characteristic α of at least 0.85 for the solar radiation range of about 0.2 to about 2.0 micrometers and an emissivity characteristic of less than 0.2 for energy in the infrared range of about 2.0 to about 20 micrometers.

4,286,010
INSULATING MICA PAPER AND TAPES THEREOF

Ronald W. Staley, Barrington, and Jonathan W. Roberts, Dover, both of N.H., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Oct. 5, 1979, Ser. No. 82,250
Int. Cl.[3] B32B *27/14, 25/02*
U.S. Cl. 428—215 5 Claims



1. An electrical insulation tape comprising:
(a) a sheet of mica paper impregnated with 10 to 35% by weight of a B-staged polybutadiene polymer;
(b) a woven glass scrim next to the mica paper;
(c) a block copolymer sealing layer selected from the group consisting of an isoprene-butadiene and styrene-butadiene next to the glass scrim; and
(d) a polyethyleneterephthlate sealing layer next to the mica on that side of the mica opposite the glass scrim.

4,286,011
POLYESTER FILMS WITH IMPROVED PROCESSABILITY AND TEAR RESISTANCE

Andrew H. Wong, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 30, 1978, Ser. No. 891,599
Int. Cl.[3] B32B *27/36;* C08J *5/18*
U.S. Cl. 428—220 12 Claims

1. A tear resistant polyester film consisting essentially of a homogeneous blended mixture of polyethylene terephthalate (PET) resin and sufficient polytetramethylene terephthalate (PTMT) resin so as to increase the tear strength of the film by at least 10% more than that exhibited by either PET or PTMT, said film being heat set at a temperature in the range of about 160° C. to 220° C. and having a thickness between about 6.3 micrometers and about 500 micrometers.

4,286,012
LONG WETTING TIME WOVEN FABRIC

Howard M. Zins, Manchester, and Edward L. Morris, Jr., St. Louis, both of Mo., assignors to Angelica Corporation, St. Louis, Mo.

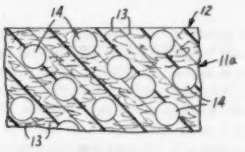
Filed Dec. 17, 1979, Ser. No. 104,105
Int. Cl.[3] D03D *13/00*
U.S. Cl. 428—252 22 Claims

13. A woven fabric which, prior to the application of any finish thereto, has an air permeability greater than eight-tenths (0.8) of a cubic foot per minute of air per square foot of area with a pressure differential as small as one half ($\frac{1}{2}$) of an inch of water, a wetting time longer than one-half of a minute, and an ability to withstand a hydrostatic pressure greater than eight (8) centimeters of water, and which comprises plural-ply ends that have a count greater than one hundred and twenty-five (125) per inch but less than one hundred and eighty (180) per inch, and picks that have a count greater than sixty-five (65) per inch but less than eighty-one (81) per inch, said woven fabric having a cotton content in the range of forty percent to sixty percent (40%–60%) and having a polyester content in the range of sixty percent to forty percent (60%–40%).

4,286,013
FLAME BARRIER

Minoo J. Daroga, Woodbury, and Robert E. Jones, Minneapolis, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Aug. 29, 1980, Ser. No. 182,685
Int. Cl.[3] B32B *7/00*
U.S. Cl. 428—266 11 Claims



1. A sheet useful as a flame barrier comprising a backing having thereon a coating comprising from 50 to 70% by weight of a cured diorganopolysiloxane gum, from 1 to 10% by weight of a fibrous filler, from 20 to 45% by weight of hollow glass microspheres, and from 1 to 5 parts by weight of a curing agent per 100 parts by weight of said diorganopolysiloxane gum, wherein said sheet is substantially free from components which volatilize below 350° C., and wherein said sheet has a weight of, at most, 0.06 g/cm^2.

4,286,014
COMPOSITE SHEET MATERIAL

Minoro Tanaka, Gifu; Kenkichi Yagi, Kyoto, and Kitao Shimizu, Kobe, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Filed Jan. 26, 1979, Ser. No. 6,578
Claims priority, application Japan, Jan. 31, 1978, 53-88858; Jun. 28, 1978, 53-77358
Int. Cl.[3] B32B *27/00;* C08K *5/34*
U.S. Cl. 428—290 16 Claims

1. A composite sheet material comprising a fibrous sheet which is impregnated and/or is coated with a polyurethane elastomer; wherein said polyurethane elastomer comprises the reaction product of
(A) a polymeric diol having a molecular weight of about 800–5000,
(B) a mixture of organic diisocyanates comprising
(a) about 2–70 mole % aliphatic diisocyanate not having a direct bond between an aromatic ring and an isocyanato group, and
(b) substantially the balance comprising an aromatic diisocyanate having a direct bond between an aromatic ring and an isocyanato group; and
(C) a chain extender comprising hydrazine and/or a derivative thereof having the formula (I):

$$NH_2NHR \quad (I)$$

wherein R is a substituent selected from the group consisting of hydrogen, an alkyl group having 1–12 carbon atoms, an aryl group, an aralkyl group, an acyl group containing an amino group and groups having the formula $-A-(ZA)_n-NHNH_2$, wherein A is a substituent selected from the group consisting of CO, CS and SO_2, Z is a substituent selected from the group consisting of an alkylene group, an arylene group, an aralkylene group, —NH—, —NHNH—, —OYO— and —NHYNH—, wherein Y is a difunctional organic group having 1–12 carbon atoms and n is 0 or 1; and
said chain extender also including another chain extender having two functional groups comprising amino and/or hydroxy groups,
wherein about 30–80% of the carbon atoms which are

bonded to nitrogen atoms constituting the ureylene and/or urethane bonds of said polyurethane elastomer constitute a benzene and/or naphthalene ring skeleton, and wherein about 2–70% of the ureylene bonds of said polyurethane elastomer are formed by the reaction of aliphatic diisocyanate and hydrazine and/or its derivatives having the Formula (I).

4,286,015

POLYARYL ETHER SULFONE SEMIPERMEABLE MEMBRANE AND PROCESS FOR PRODUCING SAME

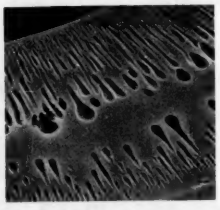
Koichi Yoshida, Fuji; Fusakazu Hayano, Chigasaki, and Yoshiro Ii, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 1, 1979, Ser. No. 35,095

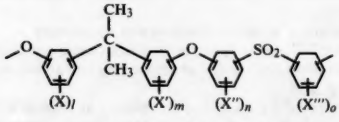
Claims priority, application Japan, May 2, 1978, 53-52919

Int. Cl.³ B32B *3/26, 5/18;* **B01D** *39/14*

U.S. Cl. 428—305 **8 Claims**



1. A polyaryl ether sulfone semipermeable membrane made of a polyaryl ether sulfone comprised of recurring units represented by the general formula (I):



(I)

wherein X, X′, X″ and X‴, which may be identical to or different from each other, are non-dissociative substituents, and l, m, n and o, which may be identical to or different from each other, are integers of from 0 to 4, which membrane has pores of a diameter increasing progressively and continuously from first and second major opposite surface layers of the membrane to the center portion thereof, which center portion is located approximately equidistant from the first and second major opposite surface layers and the membrane is comprised of a single continuous polymer phase; the diameter of the pores present on or in the immediate proximity of the first and second major surfaces being such that the percentage rejection of dextran molecules having an average molecular weight of 10,000 is not greater than 95%, the percentage rejection of dextran molecules having an average molecular weight of 70,000 is in the range of from 5% to 95% and the percentage rejection of dextran molecules having an average molecular weight of 500,000 is at least 5%, and; the average diameter of pores present in said center portion being in the range of from 0.05 to 10 microns.

4,286,016

POUCH BLEACH

Harold L. Dimond; Raymond C. Odioso, and Roger E. Reavill, all of Cincinnati, Ohio, assignors to The Drackett Company, Cincinnati, Ohio

Filed Apr. 12, 1979, Ser. No. 29,190

Int. Cl.³ B32B *5/18, 3/26*

U.S. Cl. 428—311 **20 Claims**

1. A packet adapted for bleaching fabrics in an automatic washer consisting essentially of:

A water-insoluble closed pouch containing from about 3 to about 15 grams of a substantially dry, water soluble granular hypochlorite generating bleaching agent having a particle size ranging from about 74 to about 2,380 microns;

said pouch being of a substantially open pore material selected from the group consisting of foamed polyethylene, foamed polypropylene, foamed cellulose, foamed polyurethane of either the ether or ester type, and woven or unwoven cloth; and

said open pore material having an average pore diameter of from about 130 to about 230 microns and a thickness of about ¼ inch to about 1 inch;

whereby the particle size of the granular hypochlorite generating bleaching agent is selected so that in cooperation with the porosity and the thickness of the pouch the leaching of said bleaching agent through the pouch will be delayed by from about 1 to 10 minutes from the initiation of the wash cycle.

4,286,017

HEAT-SENSITIVE RECORDING PAPER

Masato Nakamura; Saburo Nishimatsu, both of Tokyo; Toshitake Itoh, Shizuoka, and Katsumi Moronuki, Koganei, all of Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 73,878

Claims priority, application Japan, Sep. 25, 1978, 53-116595; Apr. 18, 1979, 54-46704

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—328 **2 Claims**

1. In a heat-sensitive recording paper having a heat-sensitive recording layer comprising a colorless or pale-colored chromogenic substance and a phenolic compound, the improvement characterized in that from 10 to 70% by weight of at least one amorphous synthetic compound selected from the group consisting of amorphous synthetic aluminum silicate and amorphous synthetic magnesium silicate is incorporated into said heat-sensitive recording layer.

4,286,018

BIAXIALLY ORIENTED POLY-P-PHENYLENE SULFIDE FILMS

Toshiyuki Asakura, Otsu; Yukio Noguchi, Shiga, and Hiroaki Kobayashi, Otsu, all of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

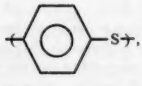
Filed Apr. 23, 1979, Ser. No. 32,726

Claims priority, application Japan, Apr. 28, 1978, 53-50117; Sep. 5, 1978, 53/108884; Sep. 5, 1978, 53/108885; Sep. 5, 1978, 53/108886; Feb. 21, 1979, 54/18489

Int. Cl.³ B32B *27/06;* **C08G** *75/00, 75/14, 61/00*

U.S. Cl. 428—332 **15 Claims**

1. A heat set biaxially oriented poly-p-phenylene sulfide film comprising predominantly a plurality of recurring units of the formula



said film having a specific gravity of about 1.330 to 1.400 and

a melt viscosity of about 100 to 600,000 poise at 300° C. and at a shear rate of 200 sec^{-1}.

2. The film of claim 1, wherein the haze value for a 25 micron thick film is less than 20% in the absence of any additives, and wherein said haze is substantially unchanged up to about 150° C.

4,286,019

POLYMER SIZING COMPOSITIONS AND METHODS YIELDING SIZED GLASS FIBERS HAVING REDUCED TACKINESS

Dennis M. Fahey, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 4, 1979, Ser. No. 45,500

Int. Cl.[3] **C08L** *91/00;* **D02G** *3/00*

U.S. Cl. 428—391 **9 Claims**

1. An aqueous sizing composition for glass fibers that produces sized glass fibers for use in reinforcing elastomeric materials wherein the sized glass fibers have reduced tackiness but still permit good adhesion between the sized glass fibers and the reinforced elastomeric materials, comprising in weight percent of the aqueous sizing composition:

(a) about 0.5 to about 2 percent of liquid hydroxyl terminated styrene butadiene copolymer having a molecular weight weight in the range of 500–5000,

(b) about 0.30 to about 2.0 percent of an organo silane coupling agent, and

(c) a system for minimizing the tackiness of the liquid hydroxyl terminated styrene-butadiene copolymer, comprising:

(1) about 0.35 to about 2 percent of one or more non-ionic emulsifying agents having a fatty acid portion with carbon to carbon bonds of at least C-14 to C-20,

(2) about 0.5 to about 1.5 percent of a wet lubricant that has a nitrogeneous group to provide hydrogen bonding with the surface of the glass, and

(3) about 0.5 to about 3 percent of one or more dry lubricant oils or wax lubricants, and

(d) the remaining amount percent of the sizing composition being water.

4,286,020

IN-FLIGHT ENCAPSULATION OF PARTICLES

Chester M. Himel, Athens, Ga., and Nathan F. Cardarelli, Barberton, Ohio, assignors to Environmental Chemicals, Inc., Wauconda, Ill.

Continuation of Ser. No. 922,171, Jul. 5, 1978, abandoned. This application May 15, 1980, Ser. No. 149,982

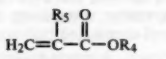
Int. Cl.[3] **B32B** *5/16;* **B01J** *13/00;* **B29C** *6/00, 13/00*

U.S. Cl. 428—407 **80 Claims**

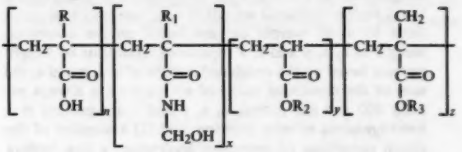
1. An encapsulated particle having been in situ encapsulated and concurrently and directly adhered to an earth target, comprising:

a particle, said particle encapsulated with a polymer,

said polymer selected from the class consisting of (a) polyvinyl acetate; (b) a polyvinyl ether wherein said repeating unit has from 2 to 10 carbon atoms; (c) an acrylic polymer or a copolymer made from monomers having the formula



where R_4 is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 30 carbon atoms and R_5 is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 12 carbon atoms; (d) the salt of (1) an interpolymer having the structure



wherein R and R_1 are members of the group consisting of hydrogen and methyl; R_2 is a member of the group consisting of methyl, ethyl, propyl and butyl; R_3 is a member of the group consisting of methyl and ethyl; n represents from 3 to 12 weight percent based on the combined weight of n, x, y and z; x represents from 8 to 25 percent based on the combined weight of n, x, y and z; y represents from 45 to 89 weight percent based on the combined weight of n, x, y and z; z represents from 0 to 44 weight percent based on the combined weight of n, x, y and z; the sum of the numerical value of n+x+y+z is always exactly 100 and the groups n, x, y and z are present in a heterogeneous relative position, and (2) a member of the group consisting of ammonia, hydrazine, a low boiling primary aliphatic amine and a low boiling secondary aliphatic amine, said salt being soluble in water in the pH range of from about 5 to 8; and (e) combinations thereof; and

said particle having been in situ encapsulated and concurrently and directly applied to the earth target;

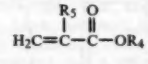
said encapsulated particle containing a small amount of an adhesive agent so that said encapsulated particle has improved tackiness and adheres to said earth target.

15. A process for the in situ encapsulation of particles between a spraying apparatus and an earth target, comprising the steps of:

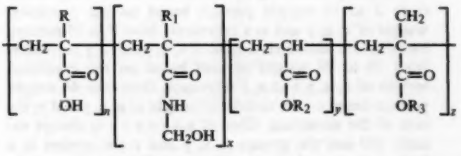
preparing a self-encapsulating polymeric-containing solution;

said solution comprising by weight from about 0.3 percent to about 25 percent of a polymer, from about 35 percent to about 99 percent of a solvent, said solvent being a compound which will solubilize said polymer, and from about 1 percent to about 40 percent of the particles, said particle being soluble or dispersible in said solvent;

said polymer selected from the class consisting of (a) polyvinyl acetate; (b) a polyvinyl ether within said repeating unit has from 2 to 10 carbon atoms; (c) an acrylic polymer or a copolymer made from monomers having the formula



wherein R_4 is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 30 carbon atoms and R_5 is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 12 carbon atoms; (d) the salt of (1) an interpolymer having the structure



wherein R and R_1 are members of the group consisting of hydrogen and methyl; R_2 is a member of the group consisting of methyl, ethyl, propyl and butyl; R_3 is a member of the group consisting of methyl and ethyl; n represents

from 3 to 12 weight percent based on the combined weight of n, x, y and z; x represents from 8 to 25 percent based on the combined weight of n, x, y and z; y represents from 45 to 89 weight percent based on the combined weight of n, x, y and z; z represents from 0 to 44 weight percent based on the combined weight of n, x, y and z; the sum of the numerical value of n+x+y+z is always exactly 100 and the groups n, x, y and z are present in a heterogeneous relative position, and (2) a member of the group consisting of ammonia, hydrazine, a low boiling primary aliphatic amine and a low boiling secondary aliphatic amine, said salt being soluble in water in the pH range of from about 5 to 8; and (e) combinations thereof;

in situ encapsulating said soluble or dispersible particle by:

spraying into the earth's atmosphere said solution containing said soluble or dispersible particle from a spray apparatus, and immediately thereafter;

evaporating said solvent in aid earth's atmosphere, and

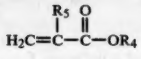
coacervating during the passage from said spraying apparatus to an earth target said polymer and said particle in said earth's atmosphere so that said polymer substantially encapsulates said particle, and

concurrently and directly applying said encapsulated particle to an earth target.

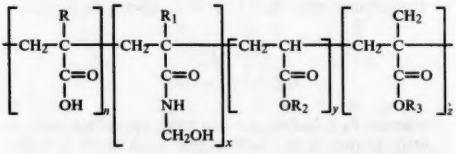
60. An in situ self-encapsulating polymericcontaining solution for concurrent and direct application to an earth target, comprising by weight, based upon the total weight of said solution

from about 0.3 percent to about 25 percent of a polymer, from about 35 percent to about 99 percent of a solvent, and from about 1 percent to about 40 percent of a particle,

said polymer selected from the group consisting of (a) a polyvinyl acetate, (b) a polyvinyl ether wherein said repeating unit has from 3 to 10 carbon atoms, (c) an acrylic polymer or a copolymer made from monomers having the formula



where R_4 is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 30 carbon atoms and R_5 is hydrogen or an alkyl, cycloalkyl, aryl, or aralkyl having from 1 to 12 carbon atoms; (d) the salt of (1) an interpolymer having the structure



wherein R and R_1 are members of the group consisting of hydrogen and methyl; R_2 is a member of the group consisting of methyl, ethyl, propyl and butyl; R_3 is a member of the group consisting of methyl and ethyl; n represents from 3 to 12 weight percent based on the combined weight of n, x, y and z; x represents from 8 to 25 percent based on the combined weight of n, x, y and z; y represents from 45 to 89 weight percent based on the combined weight of n, x, y and z; z represents from 0 to 44 weight percent based on the combined weight of n, x, y and z; the sum of the numerical value of n+x+y+z is always exactly 100 and the groups n, x, y and z are present in a heterogeneous relative position, and (2) a member of the group consisting of ammonia, hydrazine, a low boiling primary aliphatic amine and a low boiling secondary aliphatic amine, said salt being soluble in water in the pH range of from about 5 to 8; and (e) combinations thereof;

said particle being soluble or dispersible in said solvent;

said solvent being a compound in which said polymer is soluble; and

a small amount of weight based upon the total weight of the solution of an adhesive agent so that upon the in situ formation of an encapsulated particle from said solution and the concurrent and direct application of said encapsulated particle to an earth target, said adhesive agent improves the tackiness of said encapsulated particle to said target.

4,286,021

POWDER COATINGS CONTAINING COPOLYMER CONTAINING ISOBORNYL METHACRYLATE AS MELT FLOW MODIFIER

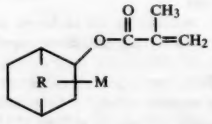
William H. Brendley, Jr., Hatboro, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 108,996, Jan. 22, 1971, abandoned. This application May 16, 1975, Ser. No. 578,289

Int. Cl.[3] **B05D** *1/04, 1/06, 3/02*

U.S. Cl. 428—413 **11 Claims**

1. A method of coating an article comprising the steps of applying a layer of a fusible polymeric powder to the article, the powder being a mixture of (A) about 3 to 10 parts by weight of a melt flow-modifying copolymer of about 40 percent to 60 percent by weight of a compound of the formula



where R is selected from the group consisting of —CH_2—, —$CH(CH_3)$—, and —$C(CH_3)_2$—, and M is selected from the group consisting of a hydrogen atom and at least one methyl group, and 40 percent to 60 percent by weight of a comonomer in the form of styrene, vinyl toluene, or at least one ester of acrylic acid or methacrylic acid and an aromatic, monocyclic aliphatic, or open chain aliphatic alcohol or alkoxy alcohol having from 1 to about 18 carbon atoms, or combinations thereof, said copolymer having an average molecular weight of from 1,000 to 8,500, and (B) 90 to 97 parts by weight of a coating resin selected from the group consisting of cellulose esters, nylons, epoxies, silicones, polysulfides, polycarbonates, polysulfones, polyphenylene oxide, polyimides, polyxylylenes, polyolefins, polyvinylhalides, acrylic ester polymers, chlorinated polyethers, and polyhaloolefins, fusing the layer while on the article, and cooling the article.

4,286,022

COATING OF FINE PARTICLES IN POLYURETHANE BLOCK COPOLYMER BINDER

Russell L. Vermillion, Hastings, and William A. Bernett, North Oaks, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 4,816, Jan. 19, 1979, abandoned. This application Aug. 25, 1980, Ser. No. 181,129

Int. Cl.[3] **B32B** *27/40;* **B05D** *5/12*

U.S. Cl. 428—423.1 **14 Claims**

1. In a coating comprising fine particles and a binder on a substrate, the improvement comprising: said binder primarily comprises a hydroxyl-terminated polyurethane block copolymer comprising

polyester or polyether segments, each having an average molecular weight of 200–3000,

short-chain aliphatic segments, 10–100 mole percent of which contain tertiary and/or quaternary nitrogen, and

symmetrical, unbranched, aromatic urethane segments interconnecting the polyester or polyether and short-chain

aliphatic segments the terminal hydroxyls being connected to said short-chain aliphatic segments.

6. Process for applying to a substrate a coating of fine particles and binder comprising the steps of

(a) inter-reacting in solution excess soluble symmetrical, unbranched, aromatic diisocyanate with hydroxyl-terminated polyester or polyether having an average molecular weight of 200–3000 to provide a mixture of isocyanate-capped polyurethane and unreacted aromatic diisocyanate,

(b) chain-extending the mixture with short-chain aliphatic diol, 10–100 mole percent of which contains tertiary nitrogen to produce a soluble hydroxylterminated polyurethane block copolymer,

(c) mixing said polyurethane block copolymer with fine particles and sufficient volatile vehicle to provide a coatable dispersion wherein the weight of the particles exceeds that of the copolymer,

(d) coating said dispersion onto a substrate, and

(e) drying the coating.

4,286,023

ARTICLE OF MANUFACTURE, THE CROSS-LINKED PRODUCT OF A SEMI-CONDUCTIVE COMPOSITION BONDED TO A CROSSLINKED POLYOLEFIN SUBSTRATE

Lucio Ongchin, New Fairfield, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 729,096, Oct. 4, 1976, Pat. No. 4,246,142. This application Sep. 2, 1980, Ser. No. 183,069

Int. Cl.³ B32B *27/08;* **H01B** *1/06*

U.S. Cl. 428—516 **11 Claims**

1. An article of manufacture comprising the crosslinked product of a vulcanizable semi-conductive composition consisting essentially of (A) an ethylene copolymer selected from the group consisting of an ethylene-alkyl acrylate copolymer containing from about 15 to 45 percent by weight of alkyl acrylate based on the total weight of said copolymer, said alkyl acrylate being selected from the group consisting of the C_1 to C_8 alkyl esters of acrylic acid and methacrylic acid, and an ethylene-vinyl acetate copolymer containing from about 15 to 45 percent by weight of vinyl acetate based on the total weight of said copolymer, (B) a butadiene-acrylonitrile copolymer containing from about 10 to about 50 percent by weight of acrylonitrile based on the total weight of said copolymer, (C) conductive carbon black, and (D) a peroxide crosslinking agent, wherein the weight ratio of (A) to (B) in said composition is 1:9 to 9:1, wherein the weight ratio of (C) to the sum weight of (A)+(B) in said composition is 0.1 to 1.5 and wherein (D) is present in an amount of from about 0.2 to about 5 percent by weight based on the total weight of the composition, said crosslinked product being directly bonded to a crosslinked polyolefin substrate.

4,286,024

TRANSPARENT HIGH TEMPERATURE RESISTANT ALUMINUM SILICON OXIDE MONOLITHIC MEMBER OR COATING

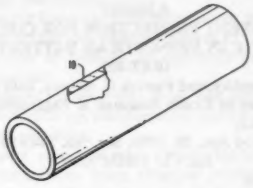
Bulent E. Yoldas, Churchill, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1980, Ser. No. 144,749

Int. Cl.³ C04B *39/12, 35/10, 35/14*

U.S. Cl. 428—446 **7 Claims**

1. A high-temperature-resistant transparent monolithic member or coating on a substrate, said member or coating consisting of aluminum and silicon in an atom ratio of about 2:1 in reacted oxide form, said member or coating having been formed by reacting precursor alkoxides of aluminum and silicon in the presence of water to form a clear solution, gelling the reacted precursors, drying the gel in the form of a monolithic member or a coating, and heating the dried material at a predetermined temperature and time sufficient to evolve all residual hydrogen and carbon and residual water and to substantially eliminate porosity to form said monolithic member or coating on a substrate.



4,286,025

DETECTOR FOR THERMOLUMINESCENCE DOSIMETRY

Zigurd A. Grant, ulitsa Kokles, 6, kv. 15; Maiga M. Grube, ulitsa Slokas, 183, kv. 100, and Vitaly I. Gotlib, ulitsa Raunas, 39/2, kv. 10, all of Riga, U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,745

Int. Cl.³ C01D *1/30, 3/24, 7/24, 7/40*

U.S. Cl. 428—542 **9 Claims**

1. A detector for thermoluminescence dosimetry comprising an ionic compound in the shape of a pellet consisting of a plurality of single-crystal particles bonded together by intramolecular forces arising from the heating of said ionic compound to a temperature above its melting point, followed by controlled cooling.

3. A method for manufacturing a detector consisting of a plurality of single-crystal particles bonded together by intramolecular forces for thermoluminescence dosimetry comprising the operations: maintaining the starting powdered ionic compound in vacuum or an inert atmosphere at a temperature higher than the melting point of said starting compound until complete melting thereof, producing a pellet from said melt, cooling said melt to a temperature 150° C. to 200° C. below its melting point, the cooling being effected at a rate of 0.5 to 2 degrees per second.

4,286,026

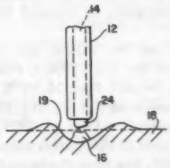
ARTICLE FOR IMPLANTING RADIOACTIVE METAL ON A SUBSTRATE

Nathan H. Cook, Cambridge, Mass., and Krishnamoorthy Subramanian, Inkster, Mich., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 913,763, Jun. 8, 1978. This application Aug. 14, 1979, Ser. No. 66,329

Int. Cl.³ B23K *35/22;* **B32B** *15/02*

U.S. Cl. 428—607 **3 Claims**



1. A wire suitable for implanting a radioactive metal in an amount of between about 10^{-8} and 10^{-11} curies in a metal surface which comprises a radioactive metal core having a diameter between about 0.0005 and 0.002 inch and a radioactivity of between about 0.05 and 0.01 curie per gm, said core being surrounded by a conductive metal sheath having a thick-

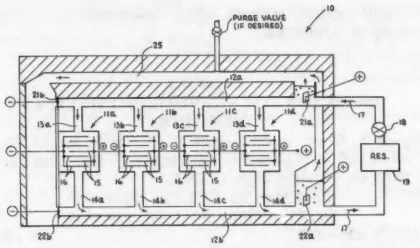
ness between about 0.001 and 0.002 and a conductivity greater than the core.

4,286,027

SHUNT CURRENT PROTECTION FOR CIRCULATING ELECTROLYTE IN MONOPOLAR BATTERY SYSTEMS (BAT-81)

Joseph A. Shropshire, and Patrick G. Grimes, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 28, 1980, Ser. No. 144,679
Int. Cl.³ H01M *8/24*
U.S. Cl. 429—18 **14 Claims**



1. A monopolar aqueous battery system, comprising:

(a) a plurality of cells electrically connected at least in part in series and connected hydraulically at least in part in parallel;

(b) means defining a hydraulic pathway for an aqueous electrolyte common to at least two of said cells, wherein an electrical electrolytic conductive bypass path is formed through shared electrolyte around said cells, whereby undesirable shunt currents can arise in said shared aqueous electrolyte;

(c) means for circulating said aqueous electrolyte between said cells; and

(d) means defining a REDOX reaction for said aqueous electrolyte wherein water is electrically consumed and replaced, whereby the composition of said aqueous electrolyte remains substantially constant, including means for applying a protective current through at least a part of said conductive bypass path through said shared electrolyte in a direction which is the same as the shunt currents through said shared electrolyte and of a magnitude which effectively at least reduces said shunt currents.

4,286,028

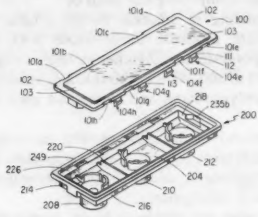
SNAP-THROUGH ANTI-IGNITION VENT CAP FOR LEAD ACID STORAGE BATTERIES

Joseph I. Heiser, Wyomissing Hills, and Edgar M. Erb, Lancaster, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 34,416, Apr. 30, 1979, and a continuation-in-part of Ser. No. 879,461, Feb. 21, 1978, which is a division of Ser. No. 744,647, Nov. 24, 1976, Pat. No. 4,086,395, which is a continuation-in-part of Ser. No. 593,546, Jul. 7, 1975, abandoned. This application Dec. 26, 1979, Ser. No. 107,113
The portion of the term of this patent subsequent to Apr. 25, 1995, has been disclaimed.
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—82 **7 Claims**

1. A battery vent for use on an electric storage battery to sealingly engage at least one opening of said battary and to vent battery gases to the atmosphere, said vent comprising:

means for providing fluid communication between said opening of said battery and the atmosphere, said means comprising a plurality of slit means for preventing the transmission of ignition from the atmosphere through said slit means, at least one of said slit means being defined in at least one underneath surface of said vent.

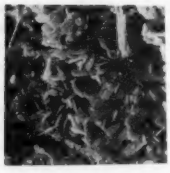


4,286,029

DIVALENT SILVER OXIDE FOR USE IN PRIMARY CELL AND MANUFACTURING METHOD THEREOF

Kaoru Murakami, Hirakata; Mitsugu Okahisa, Kyoto; Tomohiko Arita, and Kumano, Hiroshi, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 83,937, Oct. 11, 1979, Pat. No. 4,231,889, which is a continuation-in-part of Ser. No. 935,314, Aug. 21, 1978, abandoned. This application May 22, 1980, Ser. No. 152,429
Claims priority, application Japan, Aug. 19, 1977, 52/99666; Feb. 24, 1978, 53/21393; Feb. 24, 1978, 53/21394
Int. Cl.³ H01M *4/34*
U.S. Cl. 429—219 **3 Claims**



1. A silver-II oxide cell having a negative electrode comprising zinc and a positive electrode comprising silver-II oxide, said silver-II oxide being produced by reacting at least one member selected from the group consisting of silver salts and Ag_2O, a persulfate and an alkaline metal hydroxide, said silver-II oxide having an X-ray diffraction spectrum with a peak value relative intensity higher than 100 at face (200) (face interval $d=2.79_1A$) and at face (111) (face interval $d=2.76_7A$) and having a peak value relative intensity higher than 10 at face (313) (face interval $d=1.39_4A$) and at face (400) (face interval $d=1.39_5A$) on the assumption that peak value intensity at face (111) (face interval $d=2.41_3A$) is 100 and said silver-II oxide having degree of oxidation within the range from 96 to 100%, with particle surface area thereof being smaller than 0.5 m^2/g.

4,286,030

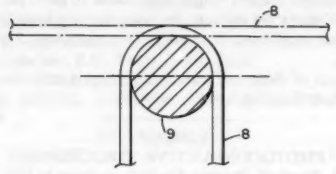
THERMOSET RESIN IMPREGNATED WEB AND PROCESS OF MAKING

Charles B. Moore, North Quincy, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Feb. 6, 1980, Ser. No. 118,701
Int. Cl.³ H01M *2/16*
U.S. Cl. 429—253 **27 Claims**

1. A fibrous web containing thermoset resin, said web comprising about 15 to about 95% by fiber weight of cellulosic

fiber; about 5 to about 85% by fiber weight of thermoplastic synthetic pulp fiber; and at least about 5% by weight of thermoset resin based on the weight of the fiber, said thermoset resin having been at least partially cured at a temperature above the melting or Vicat softening or shrinking by more than 5% temperature of said thermoplastic synthetic pulp and thereafter said web being fracture resistant as determined by cutting



said web into strips 15 cm wide by 15 cm long and bending said strips over a 2.5 cm diameter mandrel to the extent of engaging ½ of the mandrel circumference without fracture in repetitions of at least 90 out of 100 repetitions using a separate strip for each repetition, said at least partial curing of said thermoset resin in the same quantity in an all cellulosic fiber web of the same weight and thickness resulting in fracture in at least 50 out of 100 repetitions when subjected to said determination.

4,286,031

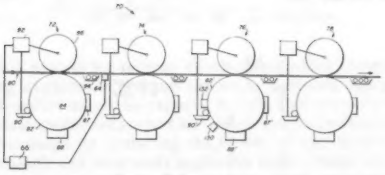
ELECTROSTATIC MULTICOLOR COMPOSITE PRINTING METHOD AND APPARATUS

Manfred R. Kuehnle, Lexington, and Jurgen Kruse, Acton, both of Mass., assignors to Coulter Stork U.S.A., Inc., Chicago, Ill.

Continuation of Ser. No. 918,165, Jun. 22, 1978, abandoned. This application Jul. 24, 1980, Ser. No. 171,736

Int. Cl.³ G03G *15/16*

U.S. Cl. 430—44 **16 Claims**



1. Apparatus for printing a composite pattern repeatedly upon a continuously moving substrate, said pattern being made up of registered impressions of different images having different colors, said apparatus comprising:

A. a plurality of uniformly spaced image printing stations, each being substantially similar in construction and adapted to produce a different color impression successively upon a substrate,

B. means for moving an elongate substrate linearly through the apparatus from station to station,

C. each station comprising

i. a rotating master sleeve, said sleeve having an image thereon in the form of a component of a composite image,

a. said sleeve being an electrophotographic member including an outer coating of photoconductive material,

b. said image being a fixed dielectric toner image which has been electrostatically formed on said outer coating,

ii. means for charging and toning said fixed dielectric toner image with a secondary toner to achieve a secondary toned image of said fixed toner image which is developed but not fixed,

iii. means for transferring the secondary toned image to a surface of the substrate while the substrate is moving through said station,

iv. means for fixing the transferred image to said substrate surface before said substrate moves to the next following station to achieve an imprinted impression of a certain color,

v. and means for removing from said sleeve any excess toner which is not transferred to said substrate surface if any had remained,

D. the master sleeve at each station carrying a different image, the stations being arranged continuously successively to repeat the imprinting superimposed in registration on the substrate as it passes through the apparatus, each sleeve being rotatable at a peripheral speed the same as the linear speed of the substrate moving through each station whereby the transferred image on the substrate is in registry with the immediately prior applied transferred and fixed image whereby to achieve a continuous series of the same composite image along the substrate as it leaves the apparatus.

12. Method of printing composite color images on an elongate substrate wherein the colored images are produced repeatedly and spaced along the substrate and each is composed of a plurality of impressions of different color which comprises:

A. providing a plurality of printing stations, each station being arranged to produce an impression of a different color,

B. providing at each station a master sleeve of electrophotographic material and rotating the sleeve continuously while simultaneously moving the substrate through the station, the peripheral speed of the sleeve being the same as the linear speed of the substrate, each master sleeve carrying a different semipermanent fixed dielectric toner image thereon capable of being reproduced as the said impression, the master sleeve at each station being identical in size and configuration to the master sleeves at all stations

C. forming a secondary unfixed toner image at each station upon the fixed toner image during each said master sleeve rotation,

D. transferring the secondary unfixed toner image to the surface of said substrate from each master sleeve as the substrate passes said each station successively,

E. fixing each transferred unfixed toner image on said substrate as the substrate moves and before the substrate reaches the next station,

whereby the impressions from each station after the first station are applied successively to said substrate superposed and in registration.

4,286,032

ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS THEREFOR

Michio Ito, Kawasaki; Nobuo Kitajima, Toride; Masanao Kasai, Tokyo, and Shunichi Ishihara, Kodaira, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,592

Claims priority, application Japan, Apr. 27, 1978, 53-50629; Jan. 31, 1979, 54-10178

Int. Cl.³ G03G *16/00*

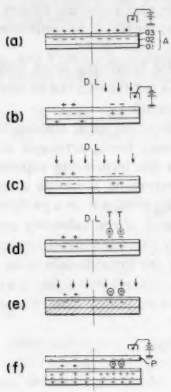
U.S. Cl. 430—55 **10 Claims**

1. An electrophotographic process using a photosensitive member for repeated image formations, wherein the photosensitive member essentially comprises a conductive layer, a photoconductive layer of a particular polarity type material, and an insulating layer, said process comprising the steps of:

forming an electrostatic latent image on the photosensitive member;

applying a developer to the latent-image-bearing photosensitive member;

subjecting the developer-bearing photosensitive member to an additional processing step including applying a corona discharge to the photosensitive member of a polarity



which is the same as the polarity type of said photoconductive layer, and exposing the photosensitive member to light, thereby preventing the corona discharge from affecting the subsequent latent image formations on the photosensitive member.

4,286,033

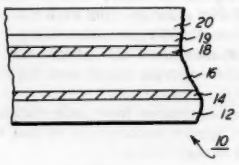
TRAPPING LAYER OVERCOATED INORGANIC PHOTORESPONSIVE DEVICE

James H. Neyhart; George A. Brown, both of Penfield; Lloyd A. Relyea, Webster; Merlin E. Scharfe, and Heinz W. Pinsler, both of Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 5, 1980, Ser. No. 127,177

Int. Cl.³ G03G *5/082, 5/14*

U.S. Cl. 430—58 **4 Claims**



1. A layered inorganic photosensitive device which comprises

(a) a substrate;

(b) a layer of hole injecting material capable of injecting holes, this layer being comprised of trigonal selenium, the hole injecting layer having a thickness of from about 0.5 microns to about 10 microns;

(c) a hole transport layer in operative contact with the hole injecting layer, this layer being comprised of a halogen doped selenium arsenic alloy, where in the percentage by weight of selenium present is from about 99.5 percent to about 99.9 percent, the percentage by weight of arsenic present is from about 0.1 percent to about 0.5 percent, and the halogen is present in an amount of from about 10 parts per million, to about 200 parts per million, the hole transport layer having a thickness of from about 5 microns to about 60 microns;

(d) a charge generating layer overcoated on the hole transport layer comprised of an inorganic photoconductive material, the charge generating layer having a thickness of from about 0.1 microns to about 5 microns;

(e) a hole trapping layer contained on the generating material, the hole trapping layer being comprised of a halogen doped selenium arsenic alloy wherein the amount of selenium present by weight ranges from about 95 percent to about 99.9 percent, the amount of arsenic present ranges from about 0.1 percent to about 5 percent, and the amount of halogen present ranges from about 10 parts per million to 200 parts per million, the hole trapping layer having a thickness of from about 0.01 microns about 5 microns, and;

(f) a layer of electrically insulating organic resin overlaying the hole trapping layer.

4,286,034

PHOTOCONDUCTIVE STRUCTURES

Andrew A. Turnbull, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 11, 1979, Ser. No. 83,921

Claims priority, application United Kingdom, Oct. 26, 1978, 41981/78

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—63 **2 Claims**

1. A photoconductive structure comprising an electrically insulating substrate, an evaporated metal electrode pattern on said substrate, a 60 to 150 nm thick polyimide film overlying said substrate and said electrode pattern, and a sintered cadmium selenide layer on said polyimide film.

4,286,035

HALOGEN DOPED SELENIUM-TELLURIUM ALLOY ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR

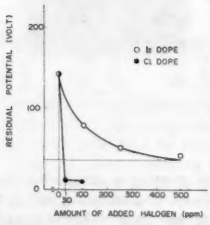
Hideyo Nishizima; Hideaki Ema, both of Numazu; Hiroshi Tamura, Fujisawa, and Hideki Akiyoshi, Numazu, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 28, 1980, Ser. No. 153,963

Claims priority, application Japan, May 31, 1979, 54-66780

Int. Cl.³ G03G *5/04*

U.S. Cl. 430—85 **6 Claims**



1. An electrophotographic photoconductor comprising an electroconductive base and a photosensitive layer formed thereon, said photosensitive layer comprising a selenium-tellurium alloy with a concentration of tellurium in the range of 5 to 20 wt. % and halogen, with a concentration in the range of 5 to 500 ppm, selected from the group consisting of fluorine, chlorine, bromine and iodine, in said photosensitive layer, the concentration of tellurium near said electroconductive base being at 5 wt. % or more and being uniform or increasing in the direction toward the surface of said photosensitive layer and the ratio of the concentration of tellurium near said electroconductive base to the concentration of tellurium near the surface of said photosensitive layer being 65 to 100:100.

2. An electrophotographic photoconductor comprising an electroconductive base and a photosensitive layer formed thereon, said photosensitive layer comprising a selenium-tellurium alloy with a concentration of tellurium in the range of 5 to 20 wt. % and halogen, with a concentration in the range

of 5 to 500 ppm, selected from the group consisting of fluorine, chlorine, bromine and iodine, in said photosensitive layer, the concentration of tellurium near said electroconductive base being at 5 wt. % or more and being uniform or increasing in the direction toward the surface of said photosensitive layer and the ratio of the concentration of tellurium near said electroconductive base to the concentration of tellurium near the surface of said photosensitive layer being 80 to 100:100.

4,286,036

PROCESS FOR REVERSAL DEVELOPMENT

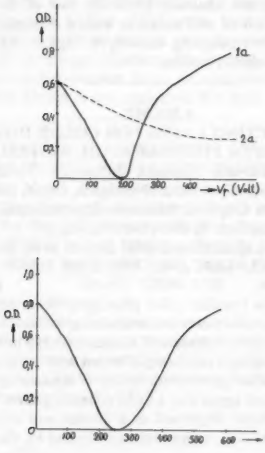
Roelof R. Hendriksma, Panningen, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Apr. 3, 1980, Ser. No. 136,838

Claims priority, application Netherlands, Apr. 2, 1979, 7902539

Int. Cl.³ G03G *13/09*

U.S. Cl. 430—100 **17 Claims**



1. In a process for reversal development which comprises forming an electrical potential pattern by uniformly charging and thereafter imagewise exposing to light a photoconductive layer on a conductive support and developing said pattern into a visible image by contacting the surface of said layer with magnetizable and inductively attractable toner powder carried on a conductive surface of a magnetic brush development device, said conductive surface being provided with an electrical potential suited for charging particles of said powder so as to deposit them on exposed image areas of said pattern by reversal development, the improvement which comprises effecting said charging of the photoconductive layer only to a charge level sufficiently below the breakdown voltage of said layer and so related to the potential on said conductive surface that the contact between said layer surface and the toner powder is insulating during the development of the potential pattern, said charge level being such that when said photoconductive layer uniformly charged to said level is contacted with said powder in a series of tests differing from one another by variations of a potential (Vr) applied to said conductive surface, the respective resulting values of the optical density (OD) of the toner powder deposited on said layer are represented by a graph having at least approximately the shape of a V with the lowest region thereof representing an OD value of zero or nearly zero.

11. A process for reversal development which comprises uniformly charging a photoconductive layer on a conductive support by means of a scorotron the grid of which comprises 5 to 10 wires per cm, thereafter exposing said layer to light so as to form on said layer a potential pattern, and developing the potential pattern into a visible image by contacting the surface of said layer with magnetizable, inductively attractable toner powder carried on a conductive surface of a magnetic brush developing device with said conductive surface impressed by a unidirectional direct current to an electrical potential suited for charging particles of said powder so as to deposit them on exposed image areas of said pattern by reversal development, said powder having a resistivity of between 10^6 and 10^{10} ohm.cm and its particle sizes being in the range of 5 to 30 microns, said charging being effected up to a charge level of said layer amounting at most to 35 to 75% of its breakdown voltage and so related to said impressed potential that the apparent surface voltage of said layer, corrected for dark decay, is approximately the same after as before the development of said charge pattern, said impressed potential being at a value 0.8 to 1.5 times that of the apparent surface voltage applied to said layer by said charging.

4,286,037

ELECTROSTATIC IMAGE ONE-COMPONENT ELECTRICALLY CONDUCTIVE THERMOPLASTIC RESIN CONTAINING POWDERED DEVELOPER PREPARED BY COAGULATION IN EMULSION

Adrianus M. P. Hectors, Tegelen, and Gerardus J. Crommentuyn, Lottum, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Division of Ser. No. 757,629, Jan. 7, 1977, Pat. No. 4,146,494. This application Sep. 5, 1978, Ser. No. 939,852

Claims priority, application Netherlands, Jan. 23, 1976, 7600686

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—107 **19 Claims**

4. Process for preparing a developer powder consisting essentially of thermoplastic resin particles containing additive material finely dispersed therein and having a specific resistance of between approximately 10^5 and 10^{11} ohm.cm, which process comprises forming an aqueous emulsion of minute thermoplastic resin particles by emulsion-polymerization of at least one monomer in an aqueous medium in the presence of an emulsifier that provides in said medium an ion that will react with a second ion to form a substantially water-insoluble quaternary ammonium salt; while stirring vigorously, adding said emulsion gradually to a water-miscible coagulant liquid that will coagulate the emulsion-polymerized resin particles of said emulsion and contains in solution a substance which provides said second ion, thereby coagulating said minute particles into resin coagula of substantially greater size having trapped and uniformly distributed therein fine particles of said quaternary ammonium salt formed in situ by reaction of said ions in the coagulation mixture; and thereafter separating said coagula from the liquid of the coagulation mixture.

16. Developer powder comprising electrically conductive thermoplastic resin particles prepared by the process of claim **4**, said particles having a specific resistance of between approximately 10^5 and 10^{11} ohm.cm and consisting essentially of dried coagula of emulsion-polymerized thermoplastic resin particles having distributed therein substantially uniformly throughout the coagula, with or without other fine additive particles, fine precipitated-in-situ particles of a substantially water-insoluble electrically conductive quaternary ammonium salt.

4,286,038

POSITIVE TONERS CONTAINING ALKYL PICOLINIUM COMPOUNDS

Chin H. Lu, and Peter F. Erhardt, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 12, 1979, Ser. No. 19,692

Int. Cl.³ G03G *9/14*

U.S. Cl. 430—108 **4 Claims**

1. A dry developer composition comprised of 92 percent by weight of a styrene butadiene copolymer resin or a styrene/n-

butyl methacrylate copolymer resin, 2 percent by weight of cetyl picolinium chloride or cetyl picolinium bromide 6 percent by weight of carbon black, and a carrier material containing a steel core which is coated with a polyvinylidene fluoride resin.

4,286,039

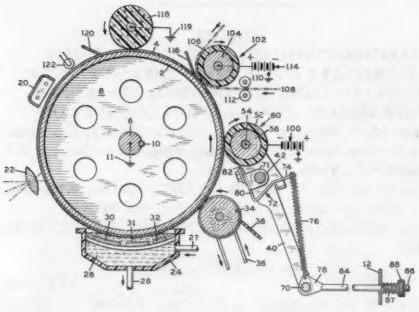
METHOD AND APPARATUS FOR REMOVING EXCESS DEVELOPING LIQUID FROM PHOTOCONDUCTIVE SURFACES

Benzion Landa, Edmonton, Canada; Ronald Swidler, Palo Alto, and Kenneth W. Gardiner, Menlo Park, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.

Filed May 15, 1979, Ser. No. 39,373

Int. Cl.³ G03G *15/10*

U.S. Cl. 430—119 **10 Claims**



1. In a method of removing excess developing liquid from a photoconductive surface bearing an electrostatic image which has been developed by a liquid developer comprising an insulating liquid having charged toner particles disseminated therethrough, the improvement comprising contacting the photoconductive surface with a compressible conductive polyurethane roller having a Shore A hardness of less than 45 and a resistivity of less than 10^9 ohm-centimeters, impressing the roller with a fixed potential relative to ground of the polarity corresponding to the polarity of the charge on the charged toner particles in the developing liquid, and rotating said roller so the relative motion between its surface and the surface of the photoconductor bearing the liquid-developed electrostatic image is substantially zero whereby to remove excess liquid from the surface of the photoconductor bearing the developed electrostatic image.

4,286,040

PROCESS FOR PREPARING AN ELECTROPHOTOGRAPHIC ELEMENT

Gerard J. E. H. van Lomm, Tegelen, Netherlands, assignor to Océ-Nederland B.V., Venlo, Netherlands

Filed Aug. 9, 1979, Ser. No. 65,359

Claims priority, application Netherlands, Aug. 14, 1978, 7808418

Int. Cl.³ G03G *5/06*

U.S. Cl. 430—127 **23 Claims**

1. A process for preparing an electrophotographic element that comprises an electrically conductive support and a photoconductive layer containing a photosensitive azo-compound dispersed in a film-forming polymeric binder, which comprises synthesizing the photosensitive azo-compound in situ by reaction between a diazonium compound and an azo-coupling component in a layer of the film-forming polymeric binder on the support.

4,286,041

COMPOSITION AND PROCESS FOR DEVELOPING DIAZOTYPE MATERIAL

Wilhelmus J. M. van de Vorle, Venlo, Netherlands, assignor to Oce-van der Grinten, Venlo, Netherlands

Continuation of Ser. No. 853,683, Dec. 8, 1977, abandoned. This application Mar. 1, 1979, Ser. No. 16,443

Claims priority, application Netherlands, Dec. 10, 1976, 7631744

Int. Cl.³ G03C *1/58, 5/22, 5/34*

U.S. Cl. 430—149 **16 Claims**

1. In a composition for developing diazotype material, comprising an aqueous solution of an azo-coupling component comprising phloroglucinol and a buffering agent in an amount sufficient to give said solution a pH between 5.5 and 8, the improvement comprising that said solution also contains, in addition to said buffering agent, a sorbic compound selected from the group consisting of sorbic acid, alkali metal, ammonium, and magnesium salts of sorbic acid and mixtures of the same, said sorbic compound being present in an amount sufficient to shift toward neutrally black the hue of the dyestuff formed by reaction of said solution with a diazonium salt of which the in vitro coupling activity is higher than that of p-diazo-o-chloro-diethylaniline.

4,286,042

LIGHT REFLECTING LAYER FOR COLOR DIFFUSION TRANSFER PHOTOGRAPHIC SYSTEM

Nobuo Sakai; Hiroshi Hayashi; Masaharu Toriuchi, and Kazunobu Katoh, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

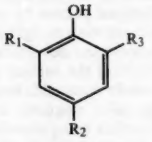
Filed Jun. 6, 1979, Ser. No. 46,127

Claims priority, application Japan, Jun. 6, 1978, 53/68198

Int. Cl.³ G03C *1/40, 7/00, 1/10, 5/54*

U.S. Cl. 430—216 **17 Claims**

8. In a diffusion transfer color photographic material comprising a photosensitive element containing at least one silver halide photographic emulsion and at least one dye image forming material, an image receiving element and means for discharging an alkaline processing solution containing a silver halide development agent and a light reflecting layer comprising a white pigment dispersed in a binder and additionally containing at least one compound represented by the formula (I):



(I)

wherein R_1 represents an alkyl group having 1 to 9 carbon atoms, R_2 represents an alkyl group having 1 to 5 carbon atoms, and R_3 represents an alkyl group having 1 to 9 carbon atoms or a benzyl group.

4,286,043

NEGATIVE-WORKING DRY PEEL APART PHOTOPOLYMER ELEMENT WITH POLYVINYLFORMAL BINDER

Harvey W. Taylor, Jr., Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 21, 1980, Ser. No. 152,118

Int. Cl.³ G03C *1/72, 1/94, 1/68*

U.S. Cl. 430—253 **8 Claims**

1. A negative-working dry peel apart photopolymerizable element consisting essentially of a support, a cover sheet and therebetween a layer of photopolymerizable composition having a dry thickness of at least 0.0005 mm and an optical density in the actinic region of not more than 0.7, the photopolymeriz-

able composition consisting essentially of (1) at least two halogen-free polymeric organic binders, (2) a free radical generating, addition polymerization initiator or initiator system activatable by actinic radiation, and (3) at least one ethylenically unsaturated monomer having a boiling point above 100° C. at normal atmospheric pressure and at least one terminal ethylenic group capable of forming a high polymer by free radical initiated, chain-propagated, addition polymerization, the monomer being present in a quantity in excess of the absorptive capacity of the binders for the monomer so that a thin layer of substantially free monomer is present at least on the surface of the photopolymerizable layer at the interface between the layer and the cover sheet, the adhesion of the photopolymerizable layer to the cover sheet being greater before polymerization than it is to the support whereas after polymerization the adhesion of said layer to the support is greater than it is to the cover sheet, at least one of the support or cover sheet being transparent to actinic radiation, the improvement being that the ratio of binder components to monomeric component is 0.5 to 1.0 to 3.0 to 1.0, at least one of the polymeric organic binders contains 0.5 to 40.0 percent by weight of polyvinylformal based on the total weight of polymeric binder present and is incompatible so as to be present as a dispersed phase in the layer to provide an appreciable reduction in cohesive strength of the photopolymerizable layer as compared to when the incompatible binder is not present in the layer.

4,286,044

SILVER HALIDE PHOTOGRAPHIC MATERIALS

Yuji Mihara; Haruo Takei; Noriyuki Inoue; Tadashi Ikeda, and Kenichi Kuwabara, all of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

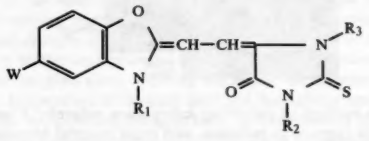
Filed Aug. 8, 1980, Ser. No. 176,442

Claims priority, application Japan, Aug. 8, 1979, 54/100858

Int. Cl.³ G03C *1/08*

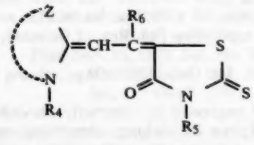
U.S. Cl. 430—264 **8 Claims**

1. A silver halide photographic material comprising a support having coated thereon a silver halide emulsion layer containing at least one sensitizing dye represented by the following formula (I) and at least one sensitizing dye represented by the following formula (II):



(I)

wherein R_1 represents a sulfoalkyl group, a carboxyalkyl group, a sulfoaralkyl group, or a carboxyaralkyl group; the alkyl moiety of said groups having up to 4 carbon atoms; R_2 represents a substituted or unsubstituted alkyl group or an aryl group; R_3 represents $-(CH_2)_{n_1}CONH(CH_2)_{m_1}OH$ or $-(CH_2)_{n_2}O(CH_2)_{m_2}OH$, wherein m_1, m_2, n_1, and n_2 each represents an integer of 1 to 7, m_1+n_1 and m_2+n_2 being, however, 8 or less and W represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, an alkoxy group, or a substituted or unsubstituted phenyl group;



(II)

wherein Z represents a non-metallic atomic group necessary for completing a thiazolidine ring or a 4-thiazoline ring; R_4 and R_5 each represents a substituted or unsubstituted alkyl group, an allyl group, or a substituted or unsubstituted phenyl group; at least one of said R_4 and R_5 being a sulfoalkyl group or a carboxyalkyl group; and R_6 represents a hydrogen atom, a substituted or unsubstituted alkyl group or a substituted or unsubstituted phenyl group.

6. The silver halide photographic material of claim 1, wherein said silver halide photographic material is a lith-type material.

4,286,045

IMAGE FORMING MATERIALS AND IMAGE FORMING PROCESS

Akira Nahara; Yoshihiro Ono; Tomizo Namiki; Shigeo Harada; Yuzo Mizobuchi, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 26,713, Apr. 3, 1979, which is a continuation of Ser. No. 818,912, Jul. 25, 1977, abandoned. This application Nov. 15, 1979, Ser. No. 94,618

Claims priority, application Japan, Jul. 28, 1976, 51-90495

Int. Cl.³ G03F *7/02*; G03C *1/00*

U.S. Cl. 430—270 **28 Claims**

1. In an image forming material comprising a support having thereon a layer composed of a Ge-S composition or a Ge-S-X composition, wherein X represents at least one element selected from the group consisting of Al, Si, Mg, Ti, V, Mn, Co, Ni, Sn, Zn, Pd, Se, Te, Fe, I, P and O, which undergoes a structural change capable of being detected optically, electrically or chemically upon exposure imagewise to light, wherein the improvement comprises:

said Ge-S or Ge-S-X composition layer is continuous and has a thickness of at least 300 Å, and

said Ge-S composition or said Ge-S-X composition contains at least one element selected from the group consisting of Ag and Cu in an amount of more than two atoms of Ag and/or Cu based on 100 atoms of the Ge-S composition or the Ge-S-X composition, wherein the amount is sufficient to improve the moisture stability of the composition and the Ag and/or Cu is dispersed in the composition.

4,286,046

PROCESS FOR PREPARATION OF MULTICOLOR SURPRINT PROOFS WITH SILICA OVERCOAT

Abraham B. Cohen, Springfield, and Roxy Fan, East Brunswick, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 4, 1979, Ser. No. 45,245

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—272 **12 Claims**

1. In a process for preparing a multicolor proof with improved image sharpness comprising a surprint having at least two nonplanar, nonsilver halide colored photoimaged elements on a support, the improvement comprising (a) coating on said photoimaged surprint at least one layer of colloidal silica from a substantially aqueous dispersion containing colloidal silica particles in a range of 10 to 60% by weight of solids wherein the colloidal silica has an average particle diameter of less than 500 nm and at least 75% of the solids of said dispersion are silica, and (b) drying the layer to a dried coating weight of at least 20 mg/dm^2.

4,286,047

PRESSURE-SENSITIVE ADHESIVE SUSCEPTIBLE TO ULTRAVIOLET LIGHT-INDUCED DETACKIFICATION

Richard E. Bennett, Hudson, Wis., and Mary A. Hittner, Little Canada, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 25, 1979, Ser. No. 60,276

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—280 **10 Claims**

1. Normally tacky and pressure-sensitive adhesive having an

epoxy equivalent value of about 400–900 and including an effective amount of ionic photoinitiator selected from the group consisting of radiation-sensitive aromatic onium salts of Group Va or VIa; onium catalysts of Group Va, VI or VIIa, diaryl halonium salts containing Group Va metal hexafluorides and triaryl sulfonium complex salts capable of promoting the polymerization of oxirane rings, whereby said adhesive is readily detackified by exposure to actinic radiation.

4,286,048

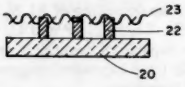
PHOTOCROSSLINKABLE COMPOSITIONS FOR SCREEN PRINTING STENCILS

Richard E. Merrill, Wakefield, and Arthur A. Massucco, Natick, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Division of Ser. No. 99,617, Dec. 3, 1979, which is a division of Ser. No. 970,196, Dec. 18, 1978, Pat. No. 4,209,582, which is a continuation-in-part of Ser. No. 770,272, Feb. 22, 1977, abandoned. This application Sep. 11, 1980, Ser. No. 186,200

Int. Cl.[3] **G03C** *1/68, 5/00*

U.S. Cl. 430—284 **25 Claims**



1. An article of manufacture suitable for use in the formation of screen printing stencils, comprising in combination

(a) a temporary support; and

(b) an ultraviolet cross-linkable film removably affixed to said temporary support, said film comprising a uv-initiated crosslinking promoter, an ultraviolet initiator, and a block copolymer formed of blocks of a copolyacrylate and a polyurethane, said copolyacrylate comprising a copolymer of a hydroxy-containing acrylate and a second acrylate component which comprises one or more esters of a non-hydroxy-containing acrylic acid or methacrylic acid or mixtures thereof; said film in its cross-linked form being further characterized as resistant to both water-based and oil-based printing inks.

4,286,049

METHOD OF FORMING A NEGATIVE RESIST PATTERN

Saburo Imamura; Shungo Sugawara, and Hirotsugu Sato, all of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 54,430

Claims priority, application Japan, Jul. 10, 1978, 53-83842

Int. Cl.[3] **B05D** *3/06;* **G03C** *5/16*

U.S. Cl. 430—296 **9 Claims**

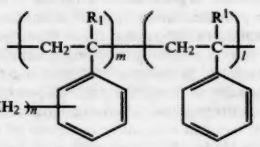
1. A methd of forming a negative resist pattern which comprises the steps of:

(a) depositing a polymer film sensitive to high energy beams on a substrate;

(b) exposing the polymer film to high energy beams applied by deep ultraviolet rays, X-rays, electron beams or gamma rays in a prescribed pattern to crosslink the exposed portions of the film; and

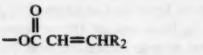
(c) removing the portions of the film other than the cross-linked portions with a solvent,

wherein the polymer is formed of components expressed by the general structural formula:



wherein

X is the same or different groups selected from the group consisting of halogens and groups of the formula



wherein R_2 is a hydrogen atom or methyl group;

R_1 is a hydrogen atom or methyl group;

n is an integer of 1, 2 or 3; and

l+m are each an integer and the total of all the l and m integers in the polymer are in the range of 50 to 50,000, and $m/m+l \geqq 0.2$.

4,286,050

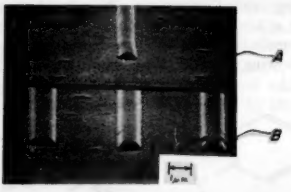
METHOD OF EXPOSING AND DEVELOPING A HOMOPOLYMER RESIST

Richard J. Himics, Trumbull, Conn.; Michael Kaplan, Franklin Township, Mercer County, and Nitin V. Desai, Somerset, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 959,847, Nov. 13, 1975. This application Jul. 22, 1980, Ser. No. 171,050

Int. Cl.[3] **G03C** *5/00, 1/71*

U.S. Cl. 430—296 **7 Claims**



1. In a method of recording information whereby a resist material is exposed to radiation, said resist material becoming more insoluble in a developer solvent where impinged upon by the radiation and the resist material is developed with the developer solvent so as to remove the soluble portions thereof, the improvement which comprises employing as the resist material a film consisting essentially of a homopolymer of 1-aza-5-acryloxymethyl-3,7-dioxabicyclo[3.3.0]octane.

4,286,051

METHODS OF ENGRAVING WORKPIECE SURFACES BY ETCHING

Ulrich Wagner, Röntgenstr. 2, D 7110 Öhringen, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,016

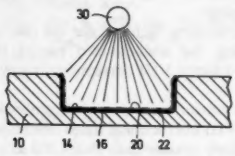
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851101

Int. Cl.[3] **G03C** *5/00*

U.S. Cl. 430—323 **3 Claims**

1. A method of engraving an arbitrarily curved or plane surface of a workpiece by etching, comprising applying a photographic lacquer layer to the surface of the workpiece to be etched, depositing on the photographic lacquer layer a thin flexible support foil which carries a dissolvable pattern made of a dye opaque to light with the pattern bearing side of the foil

on the photographic lacquer layer, transferring the pattern to the photographic lacquer layer, first removing the support foil, then exposing the photograpic lacquer layer to light through the pattern, removing the exposed or unexposed regions of the



photograhic lacquer layer, and treating the surface of the workpiece with an etching agent so that the regions not covered by the lacquer layer on the workpiece are subjected to etching.

4,286,052

METHOD FOR MAKING STAINED GLASS PHOTOMASKS USING STABILIZED GLASS

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 10, 1980, Ser. No. 110,952
Int. Cl.³ B05D *3/14, 3/02*
U.S. Cl. 430—330 **10 Claims**

1. In a method of producing a precise stained pattern in a sheet of glass wherein a source of stained-producing ions is applied to a surface of a transparent sheet of glass having an established fictive temperature, stain-producing ions are migrated from said source into patterned areas of the glass sheet, and the glass sheet is then heated to a staining temperature range at which the migrated ions develop coloration within the glass sheet and at which the glass sheet remains essentially uncrystallized, and during said heating step a difference between the established fictive temperature of the glass sheet and the staining temperature range leads to undesirable dimensional changes in the glass sheet, the improvement comprising: prior to the application of the source of stain-producing ions onto the glass sheet, reducing the difference between the fictive temperature of the glass sheet and the staining temperature range by subjecting the glass sheet to a preliminary heat treatment at a temperature at which the fictive temperature of the glass sheet is substantially changed in the direction of the staining temperature range and essentially no crystallization of the glass sheet occurs, whereby dimensional stability of the glass sheet during the subsequent color development heat treatment step is improved.

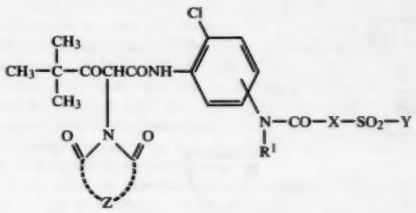
4,286,053

PROCESS FOR FORMING DYE IMAGES

Wataru Ishikawa; Ryosuke Satoh; Kiyoshi Yamashita; Tugumoto Usui, and Katsunori Kato, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,452
Claims priority, application Japan, Nov. 24, 1978, 53/145024
Int. Cl.³ G03C *7/00*
U.S. Cl. 430—389 **13 Claims**

1. A process for forming yellow dye images comprising developing an imagewise exposed light-sensitive silver halide photographic material with a developer containing an aromatic primary amine type developing agent in the presence of a yellow coupler represented by the following general formula (I):



wherein R^1 represents a hydrogen atom or an alkyl group, aryl group or heterocyclic group, which may individually have a substituent, X represents an alkylene, arylene, aralkylene or divalent organic group represented by the following general formula (II) -A-V-B- which may individually have a substituent, Y represent an alkyl group; aryl group or heterocyclic residue, which may individually have a substituent, Z represents a non-metal atomic group necessary for forming in cooperation with —CO—N—CO— a 5- or 6-membered ring,

wherein A and B individually represent an alkylene, a arylene or aralkylene group, which may individually have a substituent, and V represents a divalent linking group.

4,286,054

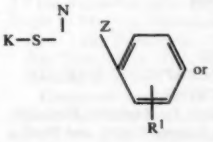
LIGHT SENSITIVE, COLOR PHOTOGRAPHIC SILVER HALIDE COMPOSITIONS WITH DIR-COUPLERS

Horst Englemann, Wolfen; Rainer Redmann; Monika Bethke, both of Dessau; Christa Melz, Delitzsch; Gerd West; Jürgen Mistol, both of Dessau, and Udo Sydow, Leipzig, all of German Democratic Rep., assignors to VEB Filmfabrik Wolfen, Wolfen, German Democratic Rep.

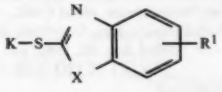
Filed May 29, 1980, Ser. No. 154,245
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—544 **15 Claims**

1. A light-sensitive, color photographic material including at least one silver halide emulsion layer containing a DIR-coupler being a compound of the formula

(I)



(II)



in which

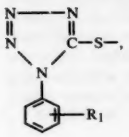
K is a substituted acylacetanilide-, 1-aryl-pyrazolone-(5)-, 1-naphthol- or phenol- structure,

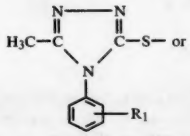
Z is an atom or atom group for the completion of a heterocyclic 5- or 6-member ring

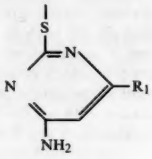
X is O, S, or NR^2

R^1 is a hydroxyl, carboxyl, sulfamido or sulfo group, in which a hydrogen atom may be substituted by an ammonium or a metal ion, and

in the case of formula (I) the hydrophilic substituted inhibitor splittable group is a moiety of the following structure







4,286,055

PROCESS FOR THE PREPARATION OF MONODISPERSE PHOTOGRAPHIC SILVER HALIDE EMULSIONS OF IMPROVED SENSITIVITY

Ralf-Udo P. Forster, and Rolf H. F. Metzger, both of Dreieich, Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1980, Ser. No. 126,295

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932650

Int. Cl.[3] **G03C** *1/02*

U.S. Cl. 430—567 **6 Claims**

1. A process for the preparation of a mondisperse silver halide emulsion of improved sensitivity, by the steps of

(a) precipitating a monodisperse silver chloride or silver chloride-bromide emulsion,

(b) converting this emulsion to a silver bromide or silver bromide-iodide emulsion by mixing it with a conversion solution of a bromide or a bromide-iodide mixture at elevated temperature, and

(c) chemically ripening the converted emulsion,

characterized in that the chemical ripening is carried out in the presence of a sulfur sensitizer at a pH value between 8 and 9.5.

4,286,056

METHOD FOR MAKING THERAPEUTIC ENZYME COMPOSITIONS

Thomas J. Andary, Fountain Valley; L. Raymond Berkebile, Santa Anna; William R. Thomas, Laguna Niguel, and Daphne C. Tse, Westminster, all of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jan. 28, 1980, Ser. No. 116,187

Int. Cl.[3] **C12Q** *3/00;* **C12N** *9/74*

U.S. Cl. 435—3 **19 Claims**

1. In a method wherein a prothrombin complex-containing blood protein fraction is activated under conditions which produce enzymatically active blood clotting factors, the improvement comprising

(a) selecting at least one of said proenzyme activating conditions which is to be varied to control the degree of activation;

(b) prior to the completion of activation, determining the magnitude of the condition needed to activate the fraction to a predetermined degree of activation;

(c) setting the condition to said magnitude; and

(d) conducting the activation of the fraction in accordance with said condition; and (e) terminating the activation at said predetermined degree of activation.

19. A method of making an activated prothrombin complex which comprises

(a) dissolving a paste of Cohn fraction IV-1;

(b) adsorbing the clotting factors in the fraction onto calcium phosphate;

(c) eluting the clotting factors from the calcium phosphate;

(d) determining the nonactivated partial thromboplastin (NAPT) and factor VIII correctional times of the step (c) eluate;

(e) where the nonactivated partial thromboplastin (NAPT) and factor VIII correctional times determined in step (d) are respectively greater than about 200 seconds and more than about 89 seconds, removing aliquots of the eluate and activating them for different periods of time;

(f) assaying the nonactivated partial thromboplastin (NAPT) time for each aliquot;

(g) determining the activation period which yields an nonactivated partial thromboplastin (NAPT) time of about from 70–100 seconds;

(h) activating the remaining bulk of the step (c) eluate under substantially the same conditions as were used to activate the step (e) aliquots;

(i) assaying the nonactivated partial thromboplastin (NAPT) time of the bulk at regular intervals before the end of the activation period determined in step (g);

(j) terminating the activation of the bulk when the nonactivated partial thromboplastin (NAPT) time is about from 70 to 100 seconds;

(k) concentrating the activated prothrombin complex by precipitation from polyethylene glycol (PEG);

(l) dissolving the polyethylene glycol (PEG) precipitate in an aqueous solution containing about from 1 to 2 units of heparin/ml; and

(m) lyophilizing the dissolved precipitate.

4,286,057

METHOD AND REAGENT FOR THE DETERMINATION OF CREATINE KINASE

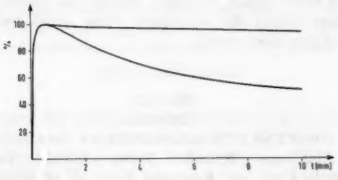
Karl Wulff, Weilheim; Fritz Stähler, Tutzing, and Wolfgang Grüber, Tutzing-Unterzeismering, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Sandhofer, Fed. Rep. of Germany

Filed Feb. 28, 1980, Ser. No. 125,381

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908054

Int. Cl.[3] **C12Q** *1/66*

U.S. Cl. 435—8 **13 Claims**

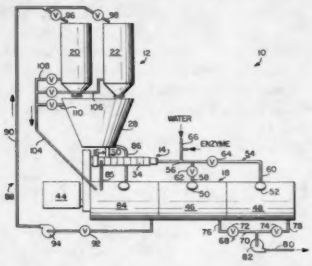


1. In a method for the determination of creatine kinase by the reaction of creatine phosphate with adenosinediphosphate with the formation of adenosine triphosphate, transformation of the latter with luciferin and oxygen in the presence of luciferase and diadenosine pentaphosphate with the formation of oxyluciferin and adenosine monophosphate, and measurement of the light emitted thereby, the improvement comprising performing the reaction at adenosine diphosphate substrate saturation concentration in the presence of 1 to 10 millimoles per liter of AMP, at pH values of 5.8 to 7.5, with at least 50 units per test of luciferase.

4,286,058
ENZYMATIC CONVERSION OF HIGH MOISTURE SHEAR EXTRUDED AND GELATINIZED GRAIN MATERIAL

Lavon G. Wenger; Galen J. Rokey, both of Sabetha, Kans., and Itamar Ben-Gera, Antwerp, Belgium, assignors to Wenger Manufacturing, Sabetha, Kans.

Filed Nov. 6, 1979, Ser. No. 91,798
Int. Cl.³ C12P *19/14*
U.S. Cl. 435—99 **11 Claims**



1. A method of producing sugars from a starch-bearing material, comprising the steps of:

providing a quantity of a starch-bearing grain material;

soaking said material in an aqueous medium, said aqueous medium being present at a level of at least about 100%, based upon the weight of said material taken as about 100%, until said material is substantially permeated with said aqueous medium and moisturized to a level of at least about 80% of the saturation level of the material;

passing said permeated and moisturized wet material into the inlet of the barrel of an elongated extruder equipped with a rotatable material-conveying screw and an apertured, flow-restricting extrusion die plate;

rotating said screw in order to move said wet material along the length of said barrel, subjecting said wet material to elevated temperatures and pressures during passage thereof along the length of said barrel, and subjecting said wet material to mechanical shear and passing the wet material through the aperture of said die plate to gelatinize at least about 95% of the gelatinizable fraction of the wet material passed through said aperture and give at least a portion of the gelatinized material a conversion time of no more than about 45 minutes; and

adding an enzyme to said gelatinized material without drying of the gelatinized material to convert at least a portion of the gelatinized material to said sugars.

4,286,059
POLYSACCHARIDE AND BACTERIAL FERMENTATION PROCESS FOR ITS PREPARATION

Kenneth Suk Kang, La Jolla; George T. Veeder, III, and Danny D. Richey, both of San Diego, all of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 806,801, Jun. 15, 1977, abandoned, which is a continuation of Ser. No. 725,595, Sep. 22, 1976, abandoned, which is a continuation of Ser. No. 616,739, Sep. 25, 1975, abandoned, which is a division of Ser. No. 373,724, Jun. 26, 1973, Pat. No. 3,933,788, which is a continuation-in-part of Ser. No. 197,941, Nov. 11, 1971, abandoned. This application Nov. 4, 1977, Ser. No. 848,533
Int. Cl.³ C12P *19/04*; C12N *1/20*; C12R *1/01, 1/22*
U.S. Cl. 435—101 **8 Claims**

1. The process for preparing Heteropolysaccharide 10, the heteropolysaccharide containing about 3% protein and about 97% carbohydrate, the carbohydrate portion of which contains about 19% of a uronic acid, about 39% glucose, about 29% galactose and about 13% fucose, said heteropolysaccharide being compatible with Methylene Blue chloride dye, that comprises cultivating under submerged aerobic conditions at a temperature of about 28° to about 35° C. a heteropolysaccharide producing strain of *Klebsiella pneumoniae* or a heteropolysaccharide producing mutant thereof in an aqueous nutrient medium containing as a source of carbon hydrolyzed starch having a dextrose equivalent of about 20–35, a source of nitrogen, a source of magnesium and a source of phosphorus, until substantial viscosity has been imparted to said medium, and recovering the heteropolysaccharide.

7. An aqueous nutrient medium containing a Heteropolysaccharide 10 producing strain of *Klebsiella pneumoniae* or a heteropolysaccharide 10 producing mutant thereof and as a source of carbon hydrolyzed starch having a dextrose equivalent of about 20–35, a source of nitrogen, a source of magnesium and a source of phosphorus.

4,286,060
PROCESS FOR PRODUCTION OF AN AMINO ACID

Nina V. Gluschenko, Grazhdansky prospekt, 31, korpus 1, kv. 114, Leningrad; Vasily N. Bukin, Leninsky prospekt, 13, korpus 1, kv. 74, Moscow; Martin E. Beker, Zveyas, 4, Riga; Leonid V. Dmitrenko, prospekt Morisa Toreza, 9, kv. 393; Varvara A. Utenkova, ulitsa Matrosa Zheleznyaka, 51, kv. 70, both of Leningrad; Mariya A. Kuzmina, Leningradskaya oblast, ulitsa 1 Maya, 3, kv. 31, Sestroretsk; Lidia S. Kutseva, Moskovskaya oblast, ulitsa Svobody, 8, Malakhovka; Natalia M. Bazdyreva, ulitsa Usievicha, 25, korpus 3, kv. 407, Moscow; Gunar K. Liepinsh, Fr. Gailya, 13, kv. 2; Eleonora B. Trusle, Lielgabalu, 2, kv. 25, both of Riga, and Tamara A. Pavlova, prospekt Shvernika, 16, kv. 69, Leningrad, all of U.S.S.R.

Filed Apr. 20, 1979, Ser. No. 31,754
Int. Cl.³ C12P *13/14, 13/08, 13/04*
U.S. Cl. 435—110 **6 Claims**

1. A process for producing an amino acid, by means of submerged cultivation of an amino acid producing microorganism in a nutrient medium comprising nitrogen, mineral salts, and a mixture of hexose and pentose monosaccharides obtained by percolation hydrolysis of cellulose-containing plant raw materials, purified to remove substantially all furfural and containing oxymethyl furfural and lignogummin substances in an amount of 1–3% by weight of said monosaccharides.

4,286,061
METHOD FOR CONTINUOUS CULTURING OF MICROBES

Ralph A. Messing, Horseheads; Robert A. Oppermann, Painted Post; Lynn B. Simpson, Corning, and Milton M. Takeguchi, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 939,190, Sep. 5, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 162,582
Int. Cl.³ C12N *11/14*
U.S. Cl. 435—176 **10 Claims**

1. A method for the continuous culturing of microbes in a plug-flow reactor which comprises the steps of:

A. supplying medium to microbes immobilized on a porous inorganic support at a rate sufficient to maintain such microbes substantially in a logarithmic growth state and

B. removing microbe-containing effluent from the immobilized microbes at a rate equal to the medium supply rate,

wherein the microbes are selected from the group consisting of bacteria, yeasts, and fungus-like organisms; such reactor is operated continuously in a substantially plug-flow mode; the immobilized microbes are substantially covered by said medium; and such porous inorganic support has a controlled porosity such that at least 70% of the pores, on a pore size distribution basis, have a pore diameter,

a. in the case of bacteria, at least as large as the smallest

major dimension of the microbes but less than about five times the largest major dimension of the microbes;

b. in the case of yeasts, at least as large as the smallest dimension of the microbes but less than about four times the largest dimension of the microbes; and

c. in the case of fungus-like organisms, at least as large as the smallest major dimension of the microbes but less than about sixteen times the largest major dimension of the microbes.

4,286,062

PROCESS FOR PRODUCING AN ENZYME PREPARATION TO TENDERIZE MEAT PRODUCTS

Leonid I. Stekolnikov, Lipetskaya ulitsa, 26, kv. 13; Boris A. Sevastyanov, Leninsky prospekt, 36, kv. 165, both of Moscow; Gennady G. Shilov, prospekt Lenina, 121, kv. 56, Rostov-na-Donu; Anatoly A. Belousov, Sosinskaya ulitsa, 6, kv. 46, Moscow, and Nikolai D. Mamonov, ulitsa Maljuginoi, 156, kv. 109, Rostov-na-Donu, all of U.S.S.R.

Filed Nov. 14, 1979, Ser. No. 94,325

Claims priority, application U.S.S.R., Nov. 22, 1978, 2687905

Int. Cl.³ C12N *9/96*

U.S. Cl. 435—188 **6 Claims**

1. Method of producing an enzyme meat tenderizing agent, which comprises comminuting the testes of slaughtered animals, extracting the thus-comminuted testes with acidudated water of a pH and in an amount sufficient to obtain a mixture having a pH value of 4.5–4.7, separating an aqueous solution from the thus obtained mixture, said aqueous solution containing hyaluronidase, adding an albumin-containing substance to said aqueous solution in an amount such that the ratio of said albumin-containing substance to the testes of the slaughtered animals is between about 0.04–1.6:10–15, thus forming a suspension, subjecting the thus-formed suspension to concentration by evaporation at a maximum temperature of 25° C., thus obtaining a concentrate of the enzyme meat tenderizing agent, and drying the thus obtained concentrate.

4,286,063

METHOD FOR PRODUCING THROMBOLYTIC PREPARATION

Tadakazu Suyama, Kyoto, Japan, assignor to The Green Cross Corporation, Osako, Japan

Filed Dec. 19, 1979, Ser. No. 105,116

Claims priority, application United Kingdom, Dec. 21, 1978, 49638/78

Int. Cl.³ C12N *9/72*

U.S. Cl. 435—215 **3 Claims**

1. In a method for producing a thrombolytic preparation from a fresh urine or a crude urokinase solution which consists essentially of (1) adsorbing urokinase on a selected adsorbent, (2) eluting and recovering the absorbed urokinase, (3) heat-treating the recovered urokinase solution at a temperature of 50° to 70° C. for 8 to 12 hours, and (4) subjecting the heat-treated solution to dialysis, the improvement comprising carrying out the heat-treatment step at pH 6 to 8 and carrying out the dialysis step at pH 5.5 to 12 to recover urokinase having a molecular weight of 54,000±10,000.

4,286,064

PROCESS FOR ISOLATING ACTIVE DEBRIDING AGENT FROM BROMELAIN

William Galbraith, Newark, Del., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Nov. 5, 1979, Ser. No. 91,041

Int. Cl.³ C12N *9/50, 9/48*

U.S. Cl. 435—219 **15 Claims**

1. A process for isolating a product from crude bromelain useful in debriding divitalized tissue in mammals comprising the steps of:

A. suspending the crude bromelain in a solution of a weakly basic buffer having a pH of about 8 to 10.5 to selectively solubilize the active components;

B. separating the undissolved solids from the solution; and

C. removing a substantial portion of the small molecules having a molecular weight of about 10,000 or less from said solution.

4,286,065

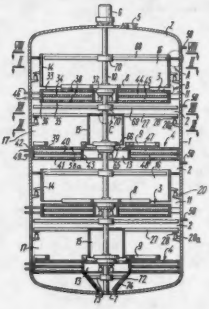
APPARATUS FOR CULTIVATION OF MICROORGANISMS ON GRANULAR NUTRIENT MEDIUM

Kalust A. Kaluniants, mikroraion Kapotnya, kvartal 4, 3, kv. 34.; Valentin G. Kozhemyakin, Leninsky prospekt, 85, korpus 6, kv. 45.; Irina M. Gracheva, ulitsa Panfilova, 18a, kv. 39., and Ljudmila I. Voino, ulitsa Kiprenskogo, 14, kv. 1., all of Moscow, U.S.S.R.

Filed Nov. 19, 1979, Ser. No. 95,667

Int. Cl.³ C12M *1/06*

U.S. Cl. 435—315 **5 Claims**



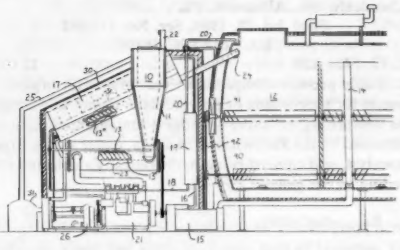
1. An apparatus for cultivating microorganisms on a granular nutrient medium, comprising: a fluid tight vessel which houses: a vertical arrangement of perforated partitions dividing said vessel height-wise into a plurality of sections, said partitions being a first kind and a second kind alternatingly arranged height-wise of the vessel; the first kind including discs mounted to define an annular gap with the housing of said vessel, and the second kind including flat rings with a central opening, sealingly secured on the housing of said vessel, the annular gaps between the housing of said vessel and the central openings of the flat rings defining ducts for the passage of the nutrient medium into the underlying sections; cylindrical shells overlying each of said perforated partitions and defining in each respective section intermediate accumulators of the nutrient medium, wherein each said shell is mounted for vertical displacement, to define selectively a passage between said respective perforated partition and said shell for advancing the nutrient medium toward said ducts; and means for selective vertical reciprocation of said cylindrical shells; a drive shaft extending along the axis of said vessel; blade-type agitators accommodated in each said section of the drive shaft above said perforated partitions, that is, above said discs and flat rings; the blades of said agitators overlying said discs having a positive angle of curvature, to advance the nutrient medium from said intermediate accumulators toward said annular gaps; the blades of said agitators overlying said flat rings having a negative angle of curvature, to advance the nutrient medium from said intermediate accumulators toward the central opening of said flat rings; a loading port at the top of said vessel; a discharge port at the bottom of said vessel; connections for inlet and outlet gas flow communicating with said sections of said vessel.

4,286,066

CONTINUOUS FERMENTATION AND DISTILLATION APPARATUS

Robert S. Butler, and Lance B. Crombie, both c/o Crombie-Butler Corp., 1306 W. CO Rd. F., St. Paul, Minn. 55112

Filed Jun. 24, 1980, Ser. No. 162,660
Int. Cl.³ C12M 1/02
U.S. Cl. 435—316 7 Claims



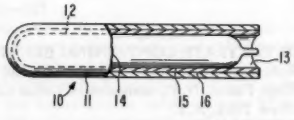
1. Apparatus for continuously fermenting a moist particulate feed and distilling the fermentation product comprising, a hopper for supplying a moist particulate feed containing a component convertible to fermentable sugar, a fermentation tank, pressure-locked auger means for forcing said feed from said hopper into said tank, means to progressively remove liquor from within said tank, means for separating solids from said removed liquor to produce a beer, a distillation column operatively connected to said means for separating solids for distilling said beer, a combustion engine for powering said auger and said means for separating solids, said engine having an exhaust surrounding an inlet section of said auger to help heat said feed and thereby produce fermentable sugar within said auger, and said auger including a section passing from said exhaust to said tank in heat exchange relation to said distillation column to provide heat for distillation.

4,286,067

ARTICLE OF MANUFACTURE COMPRISING SEMIPERMEABLE POLYMER AND DEXTRAN DERIVATIVE

Felix Theeuwes, Los Altos, Calif., assignor to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 953,489, Oct. 23, 1978, Pat. No. 4,203,440. This application Dec. 6, 1979, Ser. No. 100,932
Int. Cl.³ C08J 5/18
U.S. Cl. 521—27 2 Claims



1. An article of manufacture useful for fabricating a device for delivering a beneficial agent to a fluid environment at a controlled rate over a prolonged period of time, comprising a film formed of a semipermeable polymer selected from the group consisting of cellulose acrylate, cellulose diacylate, and cellulose triacylate having distributed therein a multiplicity of particles formed of a dextran substituted with a member selected from the group consisting essentially of diethylaminoethyl, diethyl (2-hydroxypropyl)-aminoethyl, carboxymethyl, and sulphopropyl.

4,286,068

CATALYST AND PROCESS FOR OXIDATION OF ORGANIC SUBSTRATES BY HYDROGEN PEROXIDE

Frank Mares, Whippany, and Stephen E. Jacobson, Succasunna, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris Co., N.J.

Continuation of Ser. No. 929,376, Jul. 31, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,073
Int. Cl.³ C08J 9/36
U.S. Cl. 521—53 6 Claims

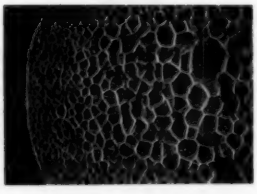
1. An improved porous polymer in granular or bead form and useful for catalyzing oxidation by hydrogen peroxide, consisting essentially of phenyl or pyridyl groups, being linked together in polyphenylene, or pendant from a polymethylenic backbone which is crosslinked by a divinylarylene at least some of which phenyl or pyridyl groups are substituted on the ring by arsenic groups; wherein the improvement comprises freedom from nitrogenous and oxygen-containing substituents on the aromatic rings of said polymer thereby achieving high stability toward hydrogen peroxide, such that the polymer can be reused repeatedly to catalyze oxidation by hydrogen peroxide, and can be separated in solid form from the product mixture in liquid form, without substantial loss of arsenic content; and wherein the said arsenic groups are —AsPh(OR), —As(OR)$_2$, —AsPh(O)(OH), —As(O)(OH)$_2$ or a mixture thereof, "R" being hydrocarbyl.

4,286,069

METHOD OF MAKING EXPANDABLE STYRENE-TYPE BEADS

James E. Millington, Lunenberg, and Stelvio Papetti, Leominster, both of Mass., assignors to American Hoechst Corporation, Somerville, N.J.

Filed Oct. 28, 1980, Ser. No. 201,659
Int. Cl.³ C08J 9/16
U.S. Cl. 521—56 5 Claims



1. A method of making expandable styrene-type polymer beads wherein the polymer beads are impregnated after the substantial completion of the polymerization, in an aqueous suspension medium comprising a suspending agent and about 0.005–0.3%, based on the weight of water, of nonionic surfactant which is a copolymer of propylene oxide and ethylene oxide having an HLB number of 8–18 and an average molecular weight of at least 1,000, and then washed with water and dried.

4,286,070

FIRE-RETARDANT, RUBBER-MODIFIED, MONOCARBOXYLIC ACID COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed May 7, 1980, Ser. No. 147,035
Int. Cl.³ C08J 9/06, 9/12
U.S. Cl. 521—88 7 Claims

1. A process for making fire-retardant foams consisting of blending a mixture of (a) a rubber-modified copolymer of 5 to 40 weight percent of a rubber selected from the group consisting of homopolymers of conjugated dienes, copolymers of said dienes with up to 50 weight percent of one or more

monoolefinically unsaturated monomers, ethylene-propylene-diene terpolymer rubbers, acrylate-diene copolymer rubbers and mixtures thereof and 95–60 weight percent of a copolymer of 70 to 95 mole percent of a monovinyl aromatic monomer and 5 to 30 mole percent of an ethylenically unsaturated monocarboxylic acid monomer; (b) from 0.5 to 10 percent by weight of water; (c) from 10 to 20 parts per hundred parts of copolymer of an at least tri-brominated diphenylether; and (d) 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether until an intimate blend is obtained; heating the blend to a temperature of between 125° and 190° C. under sufficient pressure to prevent foaming of the blend; releasing the pressure to allow the blend to expand to a foam of density between 1 and 10 pounds per cubic foot; and cooling the resultant foam to room temperature.

4,286,071
SELF-EXTINGUISHING FINE PARTICULATE EXPANDABLE STYRENE POLYMERS

Josef K. Rigler, Recklinghausen; Hans-Josef Ratajczak, Marl; Horst Leithäuser, Marl, and Karl Trukenbrod, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

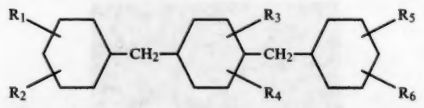
Filed Jan. 30, 1980, Ser. No. 116,842

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906336

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—96 **9 Claims**

1. In a particulate molding composition for the production of foamed articles consisting essentially of a mixture of a polymerized styrene monomer or styrene monomer in admixture with comonomers, an expanding agent, an organic bromine compound and a synergist, the improvement comprising said synergist, comprising a hydrocarbon soluble in monomeric styrene and forming stable radicals at temperatures above 300° C. in a concentration of about 0.1 to 3% by weight based on said polymerized styrene, said hydrocarbon selected from compounds having the general formula



wherein R_1 to R_6 are hydrogen, halogen, alkyl, cycloalkyl or aryl groups.

4,286,072
NOVEL POLYISOCYANURATE CATALYSTS

Edward E. McEntire, and Robert L. Zimmerman, both of Austin, Tex., assignors to Texaco Development Corp., White Plains, N.Y.

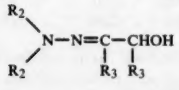
Division of Ser. No. 85,147, Oct. 15, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,459

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—118 **8 Claims**

1. In a process for preparing a polymer containing recuring isocyanurate and urethane linkages, which polymer comprises the reaction product of a polyol and an aromatic polyisocyanate, while utilizing an isocyanurate group formation catalyst; the improvement which comprises

employing as said isocyanurate catalyst a compound falling within the following structural formula:



where R_1 and R_2 are independently selected from alkyl groups of less than about 3 carbon atoms or where R_1 and R_2 together comprise cycloalkyl or morpholino groups and where R_3 is hydrogen or alkyl groups containing less than about 3 carbon atoms.

4,286,073
URETHANE CATALYSIS

Charles G. Coe, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 28, 1980, Ser. No. 172,892

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—126 **12 Claims**

1. Stable pre-mix compositions reactable with organic isocyanates for preparation of polyurethane foams, said compositions comprising an active hydrogen-containing compound as determined by the Zerewitinoff reaction, water and an organotin catalyst, said catalyst being hydrolytically stable and corresponding to the general formula

$$R_{4-n}—Sn(O_2SR')_n$$

wherein R is an alkyl radical of 1 to 8 carbon atoms, R' is an alkyl, phenyl or alkyl phenyl radical of 1 to 8 carbon atoms and n is 1 or 2.

4,286,074
AMINE-TERMINATED GRAFT COPOLYMER DISPERSIONS AND POLYURETHANES PREPARED THEREFROM

John E. Davis, Woodhaven, and Moses Cenker, Trenton, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Apr. 4, 1980, Ser. No. 137,194

Int. Cl.³ C08G *18/14, 18/63*

U.S. Cl. 521—137 **22 Claims**

1. A graft polymer dispersion prepared by the in situ polymerization in the presence of an effective amount of a free radical initiator, an ethylenically unsaturated monomer or mixture of monomers in the amount of from 1 to 60 parts of monomer or mixture of monomers per 100 parts of the dispersion product in an amine-terminated polyoxyalkylene polyether polymer.

15. A polyurethane prepared by the reaction of an organic polyisocyanate with a graft polymer dispersion prepared by polymerizing in the presence of an effective amount of a free radical initiator, an ethylenically unsaturated monomer or mixture of monomers in the amount of from 1 to 60 parts of monomer or mixture of monomers per 100 parts of the dispersion product in an amine-terminated polyoxyalkylene polyether polymer.

4,286,075
POLYARYLATE CONTAINING BLENDS

Lloyd M. Robeson, Whitehouse Station, N.J., and George A. Skoler, White Plains, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 163,977

Int. Cl.³ C08L *67/00, 67/02, 67/08*

U.S. Cl. 525—68 **39 Claims**

1. A molding composition comprising a blend of:

(a) a polyarylate derived from a dihydric phenol and a mixture of isophthalic acid and terephthalic acid, of which more than about 65 mole percent is terephthalic acid,

(b) a polyarylate derived from a dihydric phenol and a mixture of terephthalic acid and isophthalic acid, of which more than about 70 mole percent is isophthalic acid, and

(c) at least one thermoplastic polymer compatible therewith.

4,286,076
PROCESS FOR STABILIZING ACRYLONITRILE POLYMER SPINNING SOLUTIONS

Karl-Heinz David; Alfred Nogaj, and Heinrich Rinkler, all of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,727

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832212

Int. Cl.³ C08K 5/09; C08L 33/20, 33/02

U.S. Cl. 525—221 7 Claims

1. A process for the stabilization of a spinning solution of an acrylonitrile polymer and a solvent which comprises adding from 0.005 to 0.5 percent, based on the quantity of polymer, of at least one stabilizer selected from 2-phosphonobutane-1,2,4-tricarboxylic acid, 2,4-diphosphonobutane-1,2-dicarboxylic acid, polyacrylic acid or polymaleic acid to the spinning solution.

4,286,077
WEATHER RESISTANT ADHESIVE COMPOSITION

David J. St. Clair, and Earle E. Ewins, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 21, 1980, Ser. No. 142,312

Int. Cl.³ C08F 279/02

U.S. Cl. 525—232 13 Claims

1. A weather resistant pressure sensitive adhesive composition possessing excellent oxidative and UV stability along with improved tack and reduced melt viscosity comprising:

(a) 100 parts by weight of a selectively hydrogenated block copolymer component comprising an A′B′ block copolymer and a multiblock copolymer having at least two end blocks A and at least one mid block B wherein the A′ and A blocks are monoalkenyl arene polymer blocks and the B′ and B blocks are substantially completely hydrogenated conjugated diene polymer blocks, the number average molecular weight of the A′ and A blocks are between about 3,000 and about 7,000, the monoalkenyl arene content of the multiblock copolymer is between about 7% and about 22% by weight and the weight ratio between the A′B′ block copolymer and the multiblock copolymer is about 0:100 to about 75:25;

(b) about 50 to about 350 parts by weight of a tackifying resin compatible with block B; and

(c) about 0 to about 100 parts by weight of a plasticizer.

4,286,078
PROCESS FOR THE CONTINUOUS MANUFACTURE OF VINYL CHLORIDE POLYMERS

Franz Bötsch, Burgkirchen, and Helmut Kraus, Burghausen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 891,192, Mar. 29, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 62,043

Int. Cl.³ C08F 14/06, 259/04

U.S. Cl. 525—317 4 Claims

1. In a process for the continuous manufacture of homo- or copolymers or graft polymers of vinyl chloride containing at least 85% by weight relative to the total polymer of polymerized vinyl chloride units, in aqueous emulsion, in the presence of at least one water-soluble catalyst, from 1.5 to 3.5% by weight relative to the monomers used of at least one water-soluble emulsifier: the improvement consisting essentially of using as water-soluble emulsifier a mixture of (1) at least one water-soluble salt of an aliphatic, saturated monocarboxylic acid of the formula

$$\begin{array}{l} R_1(CH_2)_3 \\ | \\ R_2(CH_2)_5-CH-COOH \end{array} \quad (I)$$

in which R_1 and R_2, being identical or different, each are a saturated, linear or branched alkyl having from 1 to 5 carbon atoms, and (2) at least one sodium, potassium or ammonium salt of a monoalkylsulfuric acid ester the alkyl radical of which is saturated, linear or branched and contains from 8 to 18 carbon atoms, in an amount of from 25 to 85% by weight, relative to the total amount of emulsifier employed.

4,286,079
CURABLE COMPOSITION

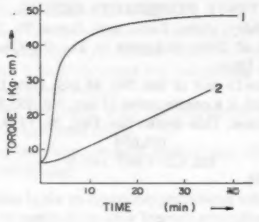
Masao Onizawa, Ohmiya, Japan, assignor to Sanyo Trading Co., Inc., Japan

Division of Ser. No. 923,402, Jul. 10, 1978. This application Dec. 31, 1979, Ser. No. 108,785

The portion of the term of this patent subsequent to Dec. 5, 1995, has been disclaimed.

Int. Cl.³ C08F 8/34, 8/32

U.S. Cl. 525—346 3 Claims



1. A curable composition comprising a chlorinated polyethylene, a sulfur-curable rubber with or without a vinyl chloride resin, sulfur with or without a sulfur donor, and at least one amino acid selected from the group consisting of lysine, ornithine, arginine and proline.

4,286,080
EXTRUSION PROCESS FOR THE PREPARATION OF POLYURETHANE UREAS

Bernd Quiring, Leverkusen; Wolfgang Wenzel, Bergisch Gladbach; Georg Niederdellmann; Hans Wagner, both of Dormagen, and Wilhelm Goyert, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,613

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1979, 2925944

Int. Cl.³ C08G 18/08, 18/63

U.S. Cl. 525—455 10 Claims

1. A process for the continuous preparation of polyurethane ureas by reacting, either all at one time or stepwise, a reaction mixture comprising:

(A) one or more polyisocyanates;

(B) one or more compounds having an average of at least 1.8 Zerewitinoff-active hydrogen atoms and a molecular weight of from 400 to 10,000;

(C) water in a quantity of from 0.07 to 40% by weight, based on the sum of Zerewitinoff-active compounds (B), (C) and (D); optionally with

(D) other compounds having one or more Zerewitinoff-active hydrogen atoms and having a molecular weight of from 32 to 400; and optionally

(E) monoisocyanates;

further characterized in that the equivalent ratio of component (B) to the sum of components (C) and (D) is from 5:1 to 1:30, the molar proportion of component (C) amounts to at least 5% of the sum of (C) and (D) and the equivalent ratio of isocyanate groups to all the Zerewitinoff-active hydrogen atoms, including water, is below 1.1:1, further characterized in that said reaction is carried out in hot screw extruders, comprising:

(a) multishaft extruders with self-cleaning screws and kneading elements;

(b) introducing components (A), (B) and optionally (D) and (E) into said hot screw extruder;
(c) introducing component (C) into said screw-extruder, where the temperature in those extruders is between 120° and 280° C., thereby transferring component (C) into the gaseous phase;
(d) adjusting pressure and temperature in the reaction zone of the extruders as to keep component C into the gaseous phase;
(e) adjusting the temperature in the extrusion zone so as to subject the extrudate to a pressure of at least 10 bar.

10. A process as claimed in claim **1** or **2**, wherein said polyurethane urea is prepared in the presence of one or more other thermoplasts.

4,286,081

ELECTROLYTE IN THE EMULSION POLYMERIZATION PROCESS FOR PRODUCING VINYL DISPERSION RESINS

Bela K. Mikofalvy, Avon Lake, and James W. Turner, Bay Village, both of Ohio, assignors to The BF Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 84,849, Oct. 15, 1979, abandoned, which is a continuation of Ser. No. 955,817, Oct. 30, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,694

Int. Cl.³ C08F *14/06*

U.S. Cl. 526—74 **23 Claims**

1. A process for producing polymers of vinyl and vinylidene halides and copolymers thereof with each other or either with up to 80% by weight of one or more polymerizable olefinic monomers having at least one terminal $CH_2=C<$ grouping, comprising forming a monomer premix containing the monomer or monomers to be polymerized, the aqueous reaction medium, from about 0.01% to about 0.5% by weight of a free radical yielding catalyst based on the weight of 100 parts of monomer or monomers being polymerized, from about 0.05% to about 6.0% by weight of at least one fugitive gas producing electrolyte based on the weight of the monomer or monomers, from about 0.5% to about 4.0% by weight based on the weight of the monomer or monomers, of an emulsifier for the polymerization system selected from the group consisting of salts of saturated fatty acids containing from 8 to 20 carbon atoms, sulfate and sulfonate type soaps of from C_{12} to C_{20} alkyl or aryl hydrocarbons, and mixtures of said emulsifiers, mixing said premix at a temperature below the reactivity of the catalyst or catalysts employed, passing said premix to a reaction zone, emulsion polymerizing said premix in said zone at a temperature in the range of about 30° C. to about 70° C., maintaining the pH in the reaction zone in the range of about 7.0 to about 12.0 until the reaction is complete, removing the polymer emulsion from said reaction zone and filtering the same to recover the polymer and friable aggregates of polymer, drying the polymer and friable aggregates of polymer while removing the electrolyte therefrom, and lightly crushing said friable aggregates to form individual spheres of polymer particles, and wherein polymer buildup in said reaction zone is reduced.

4,286,082

ABSORBENT RESIN COMPOSITION AND PROCESS FOR PRODUCING SAME

Tsuneo Tsubakimoto; Tadao Shimomura, both of Toyonaka; Yoshio Irie, Ashiya, and Yoshihiko Masuda, Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo & Co., Ltd., Osaka, Japan

Filed Apr. 7, 1980, Ser. No. 137,640

Claims priority, application Japan, Apr. 6, 1979, 54/41125; Dec. 27, 1979, 54/169368

Int. Cl.³ C08F *2/18*

U.S. Cl. 526—240 **18 Claims**

1. A process for producing an absorbent resin composition, which comprises copolymerizing in aqueous solution a mixture of 100 parts by weight of an acrylate salt monomer (B) composed of 0 to 50 mol% of acrylic acid and 50 to 100 mol% of an alkali metal acrylate and 0.001 to 5 part by weight of a crosslinkable monomer (C) having 2 to 4 groups selected from $CH_2=CHCO-$, $CH_2=C(CH_3)CO-$ and $CH_2=CH-CH_2-$ in the molecule in the presence of at least one surface-active agent (A) selected from water-soluble surface-active agents and water-dispersible surface-active agents in the presence of a water-soluble radical polymerization initiator while maintaining the initial concentration of said mixture at 25% by weight to saturation; and drying the resulting gel-like hydrous polymer under heat.

10. A process for producing an absorbent resin composition, which comprises copolymerizing in aqueous solution a mixture of 100 parts by weight of an acrylate salt monomer (B) composed of 0 to 50 mol% of acrylic acid and 50 to 100 mol% of an alkali metal acrylate and 0.001 to 5 part by weight of a crosslinkable monomer (C) having 2 to 4 groups selected from $CH_2=CHCO-$, $CH_2=C(CH_3)CO-$ and $CH_2=CH-CH_2-$ in the molecule in the presence of at least one surface-active agent (A) selected from water-soluble surface-active agents and water-dispersible surface-active agents in the presence of a water-soluble radical polymerization initiator while maintaining the initial concentration of said mixture at 25% by weight to saturation, drying the resulting gel-like hydrous polymer under heat, followed by pulverization, and then blending the resulting resin powder (D) with 0.01 to 10 parts by weight, per 100 parts by weight of the powder, of ultramicroscopic silica (E) having a specific surface area, measured by the Brunauer-Emmett-Teller method, of at least about 50 m^2/g and a particle diameter of not more than about 0.05 micron.

4,286,083

METHOD OF PREPARING POLYESTER CARBONATES

John E. Kochanowski, Stockbridge, Mass., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 755,352, Dec. 29, 1976, abandoned. This application Apr. 30, 1979, Ser. No. 34,338

Int. Cl.³ C08G *63/64*; C08L *69/00*

U.S. Cl. 528—173 **13 Claims**

1. A process for the preparation of a copolyester containing both carboxylate and carbonate groups, said copolyester having reduced coloration, comprising concurrently reacting, in the presence of a catalytic amount of a tertiary amine and an inorganic base, a carbonyl halide; a difunctional carboxylic acid; and an excess of a molar equivalent, based on the carboxylic acid, of a dihydroxy compound; which reaction is carried out in an aqueous medium comprising a water immiscible solvent wherein said inorganic base is present in an amount sufficient to maintain the reaction medium at a pH between about 4.5 and 8.5 until the carboxylic acid is consumed and thereafter increasing the amount of said inorganic base to a level sufficient to raise the pH of said reaction medium to between about 9 and 11.5 until the completion of the reaction.

4,286,084

PROCESS FOR PREPARING POLYCARBONATE USING CERTAIN NITROGEN-CONTAINING HETEROCYCLIC COMPOUNDS AS CATALYSTS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1979, Ser. No. 107,720

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—199 **11 Claims**

1. An interfacial polymerization process for preparing high molecular weight aromatic polycarbonates which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of from about 0.01 to about 10 weight percent based on the weight of said dihydric phenol of a catalyst selected from a 5 to 8 membered heterocyclic compound characterized in that (i) the ring contains only carbon and nitrogen atoms; (ii) the ring contains at least two nitrogen

atoms and at least one carbon atom; and (iii) the ring is aromatic in character and contains a maximum amount of olefinic unsaturation wherein the ring members are unsubstituted or substituted with at least one substituent group selected from the group consisting of alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, alkaryl, and aralkyl radicals, with the proviso that if said substituent group is bonded to a ring nitrogen atom, said substituent group is selected from alkyl, substituted alkyl, alkenyl, substituted alkenyl, cycloalkyl, substituted cycloalkyl, and aralkyl radicals.

4,286,085

PROCESS FOR PREPARING POLYCARBONATES USING SUBSTITUTED PYRIDINE CATALYSTS

Donald B. G. Jaquiss, New Harmony; Victor Mark, Evansville, and Lawrence C. Mitchell, Mt. Vernon, all of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1979, Ser. No. 107,729
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—199 **7 Claims**

1. An interfacial polymerization process for preparing high molecular weight polycarbonates which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of a compound selected from the group consisting of substituted pyridines and substituted pyridine salts, said catalytic amount is present from about 0.01 to about 10 weight percent based on the weight of said dihydric phenol.

4,286,086

PROCESS FOR PREPARING POLYCARBONATE USING STERICALLY HINDERED SECONDARY AMINE CATALYSTS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 28, 1979, Ser. No. 107,892
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—199 **9 Claims**

1. An interfacial polymerization process for preparing a high molecular weight aromatic polycarbonate which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol with a carbonate precursor in the presence of a catalytic amount of a sterically hindered secondary amine, or its acid addition salt, of the formula

wherein R is selected from the group consisting of C_5 to C_{30} linear alkyl radicals, substituted C_3 to C_{30} linear alkyl radicals, C_3 to C_{30} branched alkyl radicals, substituted C_3 to C_{30} branched alkyl radicals, C_5 to C_{30} linear alkenyl radicals, substituted C_5 to C_{30} linear alkenyl radicals, C_3 to C_{30} branched alkenyl radicals, substituted C_3 to C_{30} branched alkenyl radicals, C_3 to C_{12} cycloaliphatic radicals, substituted C_3 to C_{12} cycloaliphatic radicals, heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from the group consisting of oxygen and sulfur, substituted heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from the group consisting of oxygen and sulfur, C_7 to C_{20} aralkyl radicals, and substituted C_7 to C_{20} aralkyl radicals; and R^1 is selected from the group consisting of C_1 to C_{30} alkyl radicals, substituted C_1 to C_{30} alkyl radicals, C_3 to C_{12} cycloaliphatic radicals, substituted C_3 to C_{12} cycloaliphatic radicals, C_2 to C_{30} alkenyl radicals, substituted C_2 to C_{30} alkenyl radicals, heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from the group consisting of oxygen and sulfur, substituted heterocyclic ring radicals containing 3 to 12 ring carbon atoms and one atom selected from the group consisting of oxygen and sulfur, C_7 to C_{20} aralkyl radicals, and substituted C_7 to C_{20} aralkyl radicals.

4,286,087

CHITIN POWDER AND PROCESS FOR MAKING IT

Paul R. Austin, Wilmington, and Charles J. Brine, Newark, both of Del., assignors to University of Delaware, Newark, Del.

Filed Sep. 21, 1979, Ser. No. 77,831
Int. Cl.³ C08B *37/08*
U.S. Cl. 536—20 **6 Claims**

1. A process of making a dispersible chitin powder which comprises the sequential steps of

(a) dispersing a particulate chitin in a mixture of phosphoric acid and a lower aliphatic alcohol,

(b) heating said dispersion to hydrolyze the chitin to the desired lower molecular weight,

(c) removing the hydrolyzed chitin from the dispersion,

(d) redispersing the hydrolyzed chitin in water by mixing same with 5 to 25% water and subjecting the mixture to high speed shear forces,

(e) removing the water from the dispersion by drying said sheared hydrolyzed chitin,

(f) grinding the dried sheared hydrolyzed chitin to the desired particle size.

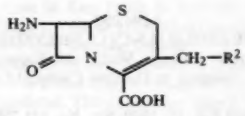
4,286,088

PROCESS FOR PREPARING 7-AMINOCEPHALOSPORINS

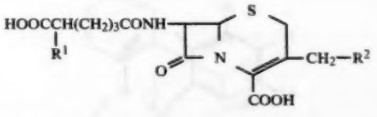
Susumu Tsushima; Norichika Matsumoto, both of Osaka, and Masayasu Kato, Ashiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 5, 1978, Ser. No. 966,654
Claims priority, application Japan, Dec. 12, 1977, 52/149718; Dec. 14, 1977, 52/151105
Int. Cl.³ C07D *501/04*
U.S. Cl. 544—16 **11 Claims**

1. A process for preparing a compound of the formula:



wherein R^2 is 3-oxobutyryloxy group, 1-methyl-1H-tetrazol-5-ylthio group or 1-(2-dimethylaminoethyl)-1H-tetrazol-5-ylthio group, or its salt which comprises reacting a compound of the formula:



wherein R^1 is an amino group which may be protected and R^2 is the same as defined above or its salt with an acetyl or propionyl halide at −10° C. to −50° C., then with an imino halide-forming agent to be converted to an imino halide, which is further reacted with a lower alkanol to be converted to an imino ether, and subjecting the imino ether to solvolysis.

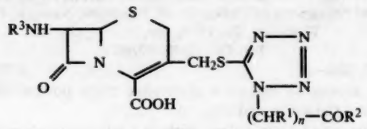
4,286,089

7-ACYL-3-(SUBSTITUTED TETRAZOLYL THIOMETHYL)CEPHALOSPORINS

David A. Berges, Wayne, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Dec. 27, 1974, Ser. No. 536,760
Int. Cl.[3] C07D *501/56, 501/50;* A61K *31/545;* C07D *257/04*
U.S. Cl. 544—27 11 Claims

1. A compound of the formula:



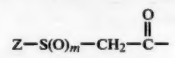
in which:

each individual R^1 is hydrogen or lower alkyl of from one to four carbon atoms;

n is one to ten;

R^2 is hydroxy, amino, lower alkylamino or di(lower)alkylamino, each alkyl having from one to four carbon atoms; and

R^3 is an acyl group of the formula:



where:

Z is methyl, trifluoromethyl, trifluoroethyl or pyridyl; and

m is zero to two,

or a non-toxic pharmaceutically acceptable salt thereof.

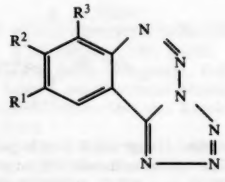
4,286,090

NOVEL TETRAZOLO [4,5-C][1,2,3]BENZOTRIAZINES

Thomas C. Britton, Portage, Mich., and Eugene R. Wagner, Carmel, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 15, 1980, Ser. No. 121,758
Int. Cl.[3] C07D *487/04*
U.S. Cl. 544—184 4 Claims

1. A tetrazolo[4,5-C][1,2,3]benzotriazine compound of the formula



wherein R^1, R^2, and R^3 independently represent hydrogen, lower alkyl, lower alkoxy, halo, trihalomethyl, or nitro and halo refers to fluoro, chloro, and bromo.

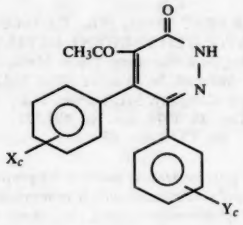
4,286,091

SYNTHESIS OF PYRIDAZINONE PHARMACEUTICAL INTERMEDIATES USING DIKETENE REACTANT

Russell M. Bimber, Painesville; Russell Buchman, Madison; Michael F. DePompei, Mentor, and Larry J. Powers, Madison, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

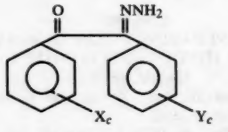
Filed May 19, 1980, Ser. No. 151,395
Int. Cl.[3] C07D *237/14*
U.S. Cl. 544—239 21 Claims

1. A process for the preparation of a compound of the general formula



(Ib)

wherein X_c and Y_c are the same or different and are independently selected from the group consisting of halogen, C_1–C_4 alkyl and C_1–C_4 alkoxy where c is 0, 1 or 2; which comprises reacting a monohydrazone of the formula



(II)

wherein X_c and Y_c are defined as above, with diketene.

4,286,092

5-AMINO-4-CHLORO-2-PHENYL-3(2H)-PYRIDAZINONE FREE FROM 5-CHLORO-4-AMINO-2-PHENYL-3(2H)-PYRIDAZINONE, AS A SELECTIVE WEED-KILLER

Raimondo Motta, Milan, Italy, assignor to Oxon Italia S.p.A., Milan, Italy

Filed Jun. 19, 1979, Ser. No. 49,654
Claims priority, application Italy, Jun. 22, 1978, 24857 A/78
Int. Cl.[3] C07D *237/22*
U.S. Cl. 544—241 6 Claims

1. Process for obtaining 5-amino-4-chlor-2-phenyl-3(2H)-pyridazinone (PCA) free from 5-chloro-4-amino-2-phenyl-3(2H)-pyridazinone (ISO-PCA) starting from commercial Pyrazon, that is from a mixture of the said two isomeric compounds, characterised in that commercial Pyrazon is treated with a mineral acid of suitable concentration, said concentration being suitable to dissolve the ISO-PCA but very little of the PCA, thereby to form a suspension of PCA in a solution of ISO-PCA, and thereafter filtering said suspension to remove PCA in the form of particles from said solution.

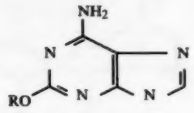
4,286,093

9-CYCLOHEXYL-2-ALKOXY-9H-ADENINE PROCESS

Davis L. Temple, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

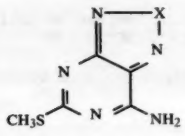
Filed Feb. 25, 1980, Ser. No. 124,190
Int. Cl.[3] C07D *473/18*
U.S. Cl. 544—276 3 Claims

1. A process for preparing 9-cyclohexyl-2-alkoxy-9H-adenine derivatives of Formula I

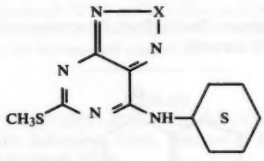

(I)

which comprises the consecutive steps of:

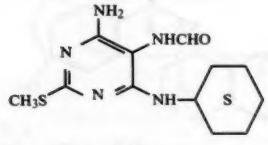
(1) reacting a diazolo[3,4-d]pyrimidine of Formula II wherein X is oxygen or sulfur


(II)

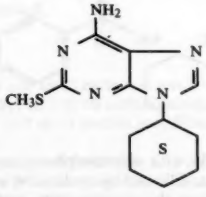
with 1 to 2 equivalents of cyclohexylamine in an inert reaction solvent at a temperature ranging from 20°–130° to produce the diazolo[3,4-d]pyrimidine of Formula III wherein X is oxygen or sulfur;


(III)

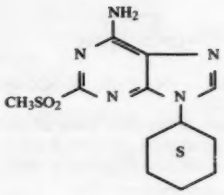
(2) reductively formylating III in 50–100% formic acid employing, when X is oxygen, catalytic hydrogenation with palladium-on-carbon catalyst or when X is sulfur, Raney nickel, to produce the formylated compound of Formula IV;


(IV)

(3) cyclizing IV with alkali metal hydroxide to produce the adenine derivative of Formula V;


(V)

(4) oxidizing V in an inert solvant to produce sulfone VI;


(VI)

(5) displacing the methylsulfone radical of VI with an alkali metal alkoxide of the formula RO-alk wherein alk represents sodium or potassium and R is 1 to 6 carbon atoms inclusive in an inert reaction solvant to produce a 2-alkoxy-9-cyclohexyladenine of Formula I.

4,286,094

PREPARATION OF A PIGMENTARY FORM OF PERYLENE-3,4,9,10-TETRACARBOXYLIC ACID DIIMIDE

Helmut Hoch, and Heinrich Hiller, both of Wachenheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,546

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837731

Int. Cl.[3] C07D *471/06;* C09B *3/18*

U.S. Cl. 546—37 **11 Claims**

1. A process for the preparation of a pigmentary form of perylene-3,4,9,10-tetracarboxylic acid diimide, which gives brilliant, transparent and reddish colorations, wherein crude perylenetetracarboxylic acid diimide is formed into the leuco compound by reaction with an alkali metal dithionite in the presence of an alkali metal hydroxide and said leuco compound is then oxidized in an aqueous suspension either in the presence of a surfactant at from 20° to 100° C. or with exposure to shearing forces in the presence of a surfactant at from 20° to 100° C.

4,286,095

4-ARYLPIPERIDINE DERIVATIVES

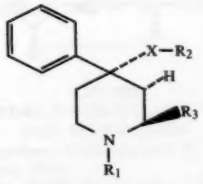
Rudolf Kubela, Cote St. Luc; Philip D. Edwards, Chateauguay, and Lisa A. Hughes, Ville de Lery, all of Canada, assignors to Canada Packers Inc., Toronto, Canada

Continuation-in-part of Ser. No. 876,702, Feb. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 711,886, Aug. 5, 1976, abandoned. This application May 1, 1979, Ser. No. 34,972

Int. Cl.[3] C07D *211/52*

U.S. Cl. 546—213 **10 Claims**

1. A 4-phenyl piperidine having the formula:



wherein

R_1 is a straight chain lower alkyl group;

R_2 is $—COCH_3$, $—COC_2H_5$ or

R_3 is $-OCOCH_3$, $-OCOC_2H_5$, —OCO-cycloalkyl, or $-OCOC_6H_4-Z$;

wherein Z is hydrogen, lower alkyl, lower alkoxy or chlorine, and X is oxygen; or an addition salt thereof with a pharmaceutically acceptable organic acid or inorganic acid.

4,286,096

TWO PHASE PROCESS FOR THE PREPARATION OF AZOLE AND AZOLINE DISULFIDES

Stanley J. Brois, Wantage, England, and Antonio Gutierrez, Hamilton Square, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 771,183, Feb. 23, 1977, Pat. No. 4,155,910, which is a division of Ser. No. 555,375, Mar. 5, 1975, Pat. No. 4,039,552. This application Dec. 18, 1978, Ser. No. 970,230

Int. Cl.³ C07D *285/08, 285/12, 277/74, 263/58*

U.S. Cl. 548—130 **5 Claims**

1. A process for the preparation of di- tri- and tetra- sulfide azoles or azolines comprising the sulfur chloride induced coupling of an olefin, sulfur chloride, and sulfur chloride being S_xCl_2 wherein x=1–3 and an alkali metal or alkaline earth metal salt of a thiol substituted heterocyclic pentatomic azole or azoline, said metal salt and said sulfur chloride forming a thiosulfenyl chloride intermediate, said reaction being carried out in a stirred medium comprising an organic phase and an aqueous phase at a temperature of from about 0° to about 90° C., and recovering said product.

4,286,097

CARBOXYLIC ACID DIANHYDRIDES BASED ON TRIMELLITIC ANHYDRIDE

Jürgen Habermeier, Pfeffingen; Eduard Knecht, and Rudolf Gisler, both of Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

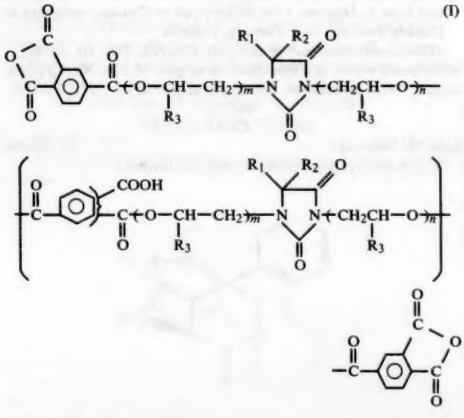
Filed Jul. 16, 1979, Ser. No. 58,224

Claims priority, application Switzerland, Jul. 28, 1978, 8146/78

Int. Cl.³ C07D *405/14*

U.S. Cl. 548—309 **5 Claims**

1. A dianhydride of the formula I



(I)

in which formula x is nought or a number from 1 to 10, m and n are each a number from 1 to 4 and R_1 and R_2 are each an alkyl having 1 to 5 C atoms, or R_1 and R_2 together are the pentamethylene radical, and R_3 is a hydrogen atom or methyl.

4,286,098

PROCESS FOR THE PREPARATION OF CHIRAL HYDANTOINS

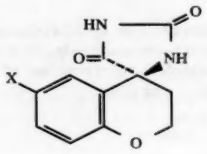
Reinhard Sarges, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 28, 1980, Ser. No. 135,137

Int. Cl.³ C07D *491/107*

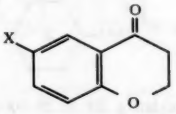
U.S. Cl. 548—309 **4 Claims**

1. The process for preparing a chiral hydantoin of the formula



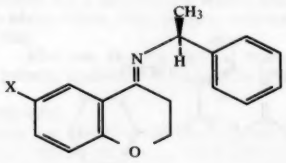
(I)

wherein X is chloro or fluoro, from the corresponding halochromanone of the formula



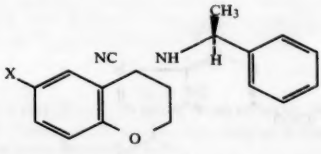
(II)

which comprises the sequence of dehydrative coupling of the chromanone with S-(−)-alpha-methylbenzylamine to form the imine of the formula



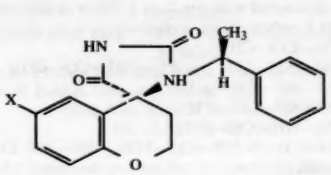
(III)

adding the elements of hydrogen cyanide to the imine in an anhydrous organic solvent to selectively form and crystallize the chiral nitrile of the formula



(IV)

condensing the nitrile with chlorosulphonyl isocyanate in a reaction-inert solvent, followed by cyclization and hydrolysis in aqueous acid to form the alpha-methylbenzylhydantoin of the formula



(V)

and solvolyzing the alpha-methylbenzylhydantoin in a strong acid to the chiral hydantoin of formula I.

4,286,099

SULFOLENE HYDROGENATION

Martin E. Nash, and Edward E. Huxley, both of Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 12, 1980, Ser. No. 120,811
Int. Cl.[3] C07D *333/48*
U.S. Cl. 549—87 15 Claims

1. In a process for producing a sulfolane compound wherein a feed comprising a sulfolene compound containing sulfur dioxide and other sulfur-containing catalyst poisons is catalytically hydrogenated in the presence of a hydrogenation catalyst, the improvement comprising pretreating said feed prior to hydrogenation by contacting same in the presence of hydrogen with a used and/or at least partially spent Raney nickel catalyst which contains some degree of scavenging activity under liquid phase conditions and at a temperature in the range of about 10° to about 70° C. and a hydrogen pressure from about 100 to about 7,000 kPa sufficient to substantially remove and/or render innocuous said catalyst poisons.

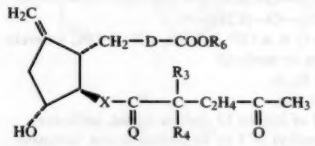
4,286,100

9-DEOXY-9-METHYLENE-19-OXO-PGF$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,217
Int. Cl.[3] C07C *177/00*
U.S. Cl. 560—121 4 Claims

1. A compound of the formula



wherein D is
(1) $(CH_2)_3$—$(CH_2)_g$—CH_2—, or
(2) $(CH_2)_3$—$(CH_2)_g$—CF_2—;
wherein
g is zero, one, two, or three;
wherein
Q is α—OH:β—R_5 or α—R_5:β—OH, wherein R_5 is hydrogen or methyl;
wherein
R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) —CH_2—CO—R_{28},
wherein
(p—Ph) is para-phenyl or inter-para-phenylene,
wherein
R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein
R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein
X is cis- or trans—CH=CH—.

4,286,101

PROCESS FOR PREPARING TEREPHTHALIC ACID

Hiroshi Hashizume, Kitakyushi, and Sigeki Harada, Nakama, both of Japan, assignors to Mitsubishi Chemical Industries Ltd., Fujuoka, Japan

Filed Oct. 12, 1979, Ser. No. 84,153
Claims priority, application Japan, Oct. 19, 1978, 53-128709
Int. Cl.[3] C07C *51/42*
U.S. Cl. 562—487 7 Claims

1. In a process for preparing terephthalic acid of high purity by reacting p-xylene with molecular oxygen in an acetic acid solvent in the presence of a catalyst containing at least one heavy metal and bromine, the improvement comprising the steps of:
(i) introducing p-xylene and molecular oxygen into a first reaction zone kept at a temperature of 180°–230° C. to oxidize at least 95% by weight of the p-xylene into terephthalic acid thereby forming a terephthalic acid—containing slurry;
(ii) introducing the terephthalic acid—containing slurry from the first reaction zone into a second reaction zone kept at a temperature 2°–30° C. below the temperature of the first reaction zone in which the terephthalic acid—containing slurry is subjected to post-oxidation with molecular oxygen without supplying p-xylene, whereby oxidation intermediates present in the mother liquor of the slurry are oxidized; and,
(iii) introducing the terephthalic acid—containing slurry from the second reaction zone into a third reaction zone kept at a temperature of at least 230° C. in which the terephthalic acid—containing slurry is subjected again to post-oxidation with molecular oxygen without supplying p-xylene, whereby at least a part of the terephthalic acid crystals in the slurry are dissolved and those oxidation intermediates occluded in the terephthalic acid crystals are oxidized, and subjecting the resulting reaction mixture to crystallization and then to solid-liquid separation to recover terephthalic acid.

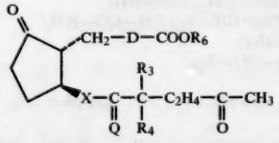
4,286,102

13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-19-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,958
Int. Cl.[3] C07C *177/00*
U.S. Cl. 562—503 4 Claims

1. A compound of the formula



wherein D is
(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_2—O—(CH_2)_2—$, or
(3) $—CH_2—O—(CH_2)_3—$;
wherein Q is $\alpha—OH:\beta—R_5$ or $\alpha—R_5:\beta—OH$, wherein R_5 is hydrogen or methyl; wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and wherein X is —C≡C—.

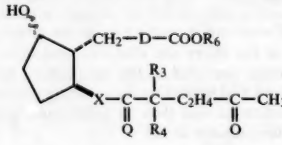
4,286,103

13,14-DIDEHYDRO-INTER-OXA-11-DEOXY-19-OXO-PGF_1 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 131,959
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



wherein D is
(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_2—O—(CH_2)_2—$, or
(3) $—CH_2—O—(CH_2)_3—$;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(d) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(p-Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N-NH—CO—NH_2,
(m) β—naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p-Ph) is para-phenyl or inter-para-phenylene, wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmaceutically acceptable cation;
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

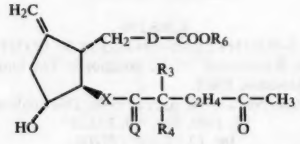
4,286,104

13,14-DIDEHYDRO-INTER-OXA-9-DEOXY-9-METHYLENE-19-OXO-PGF_1 COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979. This application Mar. 20, 1980, Ser. No. 132,032
Int. Cl.³ C07C *177/00*
U.S. Cl. 562—503 **4 Claims**

1. A compound of the formula



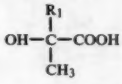
wherein D is
(1) $(CH_2)_3—O—CH_2—$,
(2) $(CH_2)_2—O—(CH_2)_2—$, or
(3) $—CH_2—O—(CH_2)_3—$;
wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;
wherein R_6 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,
(g) —(p—Ph)—CO—CH_3,
(h) —(p—Ph)—NH—CO—(p—Ph)—NH—CO—CH_3,
(i) —(p—Ph)—NH—CO—(p—Ph),
(j) —(p—Ph)—NH—CO—CH_3,
(k) —(p—Ph)—NH—CO—NH_2,
(l) —(p—Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $—CH_2—CO—R_{28}$,
wherein (p—Ph) is para-phenyl or inter-para-phenylene,
wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation;
wherein R_3 and R_4 hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and
wherein X is —C≡C—.

4,286,105
PROCESS FOR THE PREPARATION OF ANTIOXIDANT AMIDES

Dane K. Parker, Massillon, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

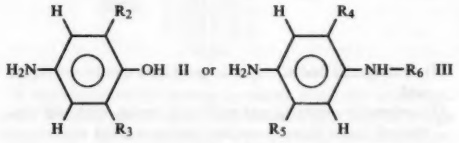
Filed Nov. 9, 1979, Ser. No. 92,820
Int. Cl.[3] C07C *102/04*
U.S. Cl. 564—205 7 Claims

1. An improved process for the synthesis of a α,β unsaturated aryl amides comprising reacting an organic acid having general formula I:



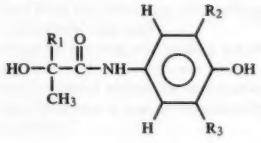
I

wherein R_1 is selected from the group consisting of hydrogen, methyl or phenyl radicals; with an aryl amine selected from one of the following structural formulae:



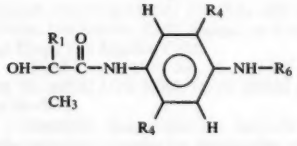
II or III

wherein R_2 and R_3 are the same or different alkyl radicals selected from the group consisting of isopropyl, secondary butyl, tert.-butyl, tert.-pentyl or tert.-hexyl; R_4 and R_5 are the same or different radicals selected from the group consisting of hydrogen, methyl or ethyl; and R_6 is selected from a phenyl radical or an alkyl substituted phenyl radical with one to three same or different alkyl substituents selected from either methyl or ethyl radicals; to produce a hydroxy aryl amide having one of the following structural formulae:



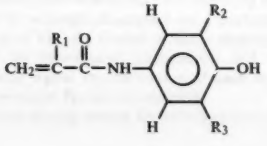
IV

or



V

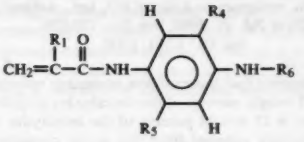
wherein R_1, R_2, R_3, R_4, R_5, and R_6 are defined as above, and (B) dehydrating, through use of concentrated sulfuric acid at a temperature of 98°–110° C. in at least a 1 to 1 molar ratio, the hydroxy aryl amide to form an α, β unsaturated amide having one of the following structural formulae:



VI

-continued

or



VII

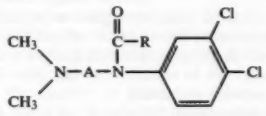
wherein R_1, R_2, R_3, R_4, R_5 and R_6 are defined as above.

4,286,106
N-[ω-(DIMETHYLAMINO)ALKYL]-3',4'-DICHLOROPROPIONANILIDES

Michael P. Kane, and Jacob Szmuszkovicz, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 934,239, Aug. 16, 1978, Pat. No. 4,180,522, which is a continuation of Ser. No. 838,767, Oct. 3, 1977, abandoned, which is a continuation of Ser. No. 746,863, Dec. 2, 1976, abandoned. This application Jul. 30, 1979, Ser. No. 61,569
The portion of the term of this patent subsequent to Dec. 25, 1996, has been disclaimed.
Int. Cl.[3] C07C *103/75*
U.S. Cl. 564—220 9 Claims

1. A compound of formula I



wherein A is alkylene of 4 to 5 carbon atoms, inclusive; wherein R is ethyl, cyclopropyl or vinyl, or the pharmacologically acceptable acid addition salts thereof.

4,286,107
SILVER CATALYSTS USED TO PREPARE POLYAMINOPOLYPHENYLMETHANES

Edward T. Marquis, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,325
Int. Cl.[3] C07C *85/18*
U.S. Cl. 564—332 3 Claims

1. A method of preparing diaminodiphenylmethane and higher homologues thereof which comprises the step of condensing aniline and formaldehyde in the presence of a silver tungstate catalyst.

4,286,108
PROCESS FOR PREPARING HYDRAZINES

Hans Osborg, 80 Longview Rd., Port Washington, N.Y. 11050

Filed Oct. 17, 1979, Ser. No. 85,882
Int. Cl.[3] C07C *109/04*
U.S. Cl. 564—464 13 Claims

1. A process for preparing anhydrous hydrazine and hydrocarbyl-substituted hydrazines, which comprises; reacting a tertiary hydrazinium halide with a compound selected from the group consisting of an alkali metal amide, an alkaline earth metal amide, a hydrocarbyl-substituted alkaline metal amide and a hydrocarbyl-substituted alkaline earth metal amide, in the presence of a non-aqueous inert carrier.

4,286,109

HIGH DENSITY FUEL COMPOSITIONS

Richard V. Norton, Dublin, and Dennis H. Fisher, Westerville, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Jul. 31, 1980, Ser. No. 174,078
Int. Cl.³ C10L *1/04*
U.S. Cl. 585—14 **6 Claims**

1. A high density fuel composition consisting essentially of (a) from 70–95 weight percent of exo-tetrahydro dicyclopentadiene; (b) from 4–25 weight percent of the tetrahydro derivative of an oligomer selected from the group consisting of a co-trimer of cyclopentadiene and methylcyclopentadiene, a trimer of cyclopentadiene, a trimer of methylcyclopentadiene, and mixtures thereof; and (c) from 1–7 weight percent of a C_5–C_7 alkane, cycloalkane or mixtures thereof.

4,286,110

SEPARATION OF PRODUCTS OF HF ALKYLATION

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

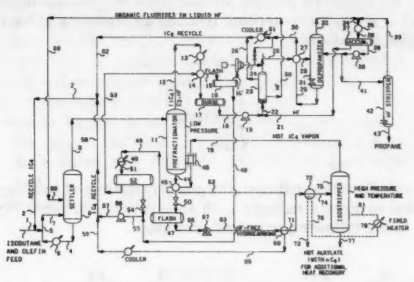
Filed Jan. 17, 1980, Ser. No. 112,886
Int. Cl.³ C07C *2/56*
U.S. Cl. 585—719 **6 Claims**

1. A process for treating the reactor effluent hydrocarbon phase from an alkylation zone in which isoparaffin and olefin are contacted in the presence of HF catalyst to form alkylate product, said method comprising:

(1) separating hydrocarbon phase from the reaction effluent;

(2) separating said hydrocarbon phase in a fractionator to produce a bottoms stream comprising isoparaffin, paraffin, and alkylate product and an overhead stream comprising isoparaffin, paraffin, and HF;

(3) flashing said bottoms stream to produce a flashed vapor enriched in isoparaffin and a liquid enriched in alkylate as compared to said bottoms stream;



(4) cooling said flashed vapor to produce a condensed liquid; and

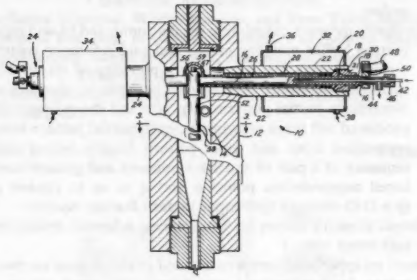
(5) indirectly contactig said overhead stream with said condensed liquid thereby cooling said overhead stream and heating said condensed liquid.

4,286,111

APPARATUS FOR INTERCONNECTING A POWER SUPPLY TO AN ELECTRODE WITHIN A CHAMBER CONTAINING FLUID MAINTAINED AT A HIGH TEMPERATURE AND PRESSURE

Lester G. Massey, Moreland Hills, Ohio; David A. George, Park Forest, Ill.; Robert I. Brabets, Lombard, Ill., and William A. Abel, Joliet, Ill., assignors to CNG Research Company, Cleveland, Ohio

Filed Mar. 6, 1980, Ser. No. 127,737
Int. Cl.³ B02C *19/18;* H01B *17/30;* H05B *3/60*
U.S. Cl. 174—15 BH **7 Claims**



1. An apparatus for passing an electrical current to an electrode within a vessel, said vessel containing a fluid at a high temperature and a high pressure, comprising, in combination:

at least a pair of housings secured to said vessel and extending outwardly therefrom, each housing having an external open end;

at least a single conductor passing through said housings and said vessel and extending beyond said external open ends, said conductor being electrically connected to said electrode and having an orientation with respect to said vessel whereby a pressure imbalance upon said conductor is substantially avoided;

sealing means for sealing said external open ends of said housings about said conductor to substantially avoid leakage of said fluid therethrough, said sealing means including an elastomeric seal; and

cooling means for cooling said sealing means;

said housings and said cooling means cooperatively defining temperature control means for maintaining the temperature of said elastomeric seal to substantially avoid thermal softening thereof.

4,286,112

MESSAGE PREPARATION TIMING APPARATUS

Gary A. Weiss, Los Angeles, Calif., assignor to Pacesetter Management Corp., Los Angeles, Calif.

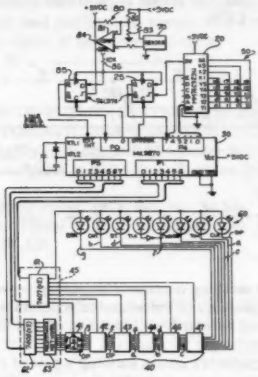
Filed May 9, 1980, Ser. No. 148,107
Int. Cl.³ G07C *1/10;* H04L *15/24;* H04M *15/18*
U.S. Cl. 178—23 R **13 Claims**

12. In a teleprinter communications network of the type having teletypewriter consoles for transmitting and receiving messages over such a network, and wherein a plurality of consoles each include a tape perforating and reading device for preparing messages for being transmitted, the improvement comprising:

an apparatus for use with said teleprinter consoles that include said tape perforating and reading device, the apparatus having means adapted to continually sense the occurrence of message characters on a perforated tape being generated by said device while a message is being prepared for subsequent transmission and to generate an electrical signal representative of each such occurrence, the apparatus further comprising:

a keyboard having means for selecting one of a plurality of transmission rates each of which corresponds to a known period of time for transmitting a message character;

a microcomputer connected to said keyboard and to said sensing means and having a register for accumulating a count corresponding to the number of character occurrence signals produced by said sensing means, and having a memory device pre-programmed to store therein tables of message transmission times including at least one table for each transmission rate in said plurality, each such table having a plurality of signal codes representative of said



transmission times and arranged in known correspondence to said register count;

said microcomputer being responsive to said rate selecting means of said keyboard and to said accumulating count of said register to fetch from said memory device the particular signal code that is indicative of the time required to transmit the number of characters represented by said character count at the selected transmission rate; and

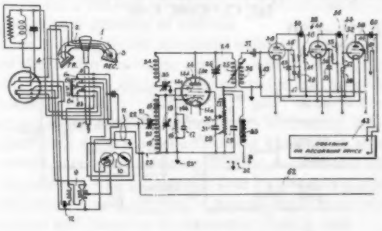
a digital display device connected to said microcomputer for receiving said fetched signal code for displaying said transmission time.

4,286,113

TELEPHONE SYSTEM EAVESDROPPING DEVICE

Eugene J. Cronin, 5 Cedar Ct., Menlo Park, Calif. 94025

Filed Feb. 2, 1953, Ser. No. 334,440
Int. Cl.³ H04K *1/00*
U.S. Cl. 179—1 MN **15 Claims**



13. The method of remotely picking up sound vibrations on a telephone subscribers circuit of the type including a telephone microphone and receiver and a cutoff switch including contacts movable from a closed position to a capacitatively aligned open position which consists in impressing high frequency currents on the telephone subscribers circuit from a remote location for effecting an electrically conductive path through the contacts in said circuit in either the capacitatively aligned open position of the contacts or the closed position

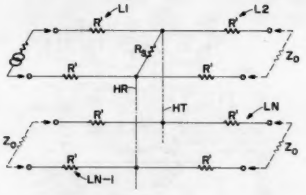
thereof, and reproducing at the remote location modulations incident to sound vibrations picked up by the telephone microphone.

4,286,114

TWO-WIRE RESISTANCE BRIDGES FOR PRIVATE LINE CIRCUITS

John E. Dannenmann, Jr., and Bill E. Johnson, both of Portland, Oreg., assignors to Bejed, Inc., Portland, Oreg.

Filed Feb. 12, 1980, Ser. No. 120,840
Int. Cl.³ H04B *1/58*; H04M *3/56*
U.S. Cl. 179—1 CN **3 Claims**



1. A 2-wire multileg resistance branching network for interconnecting a plurality of voiceband telecommunication lines in a system having standardized input and output line levels, said network comprising

electrical conductor means forming a pair of common junctions,

at least three substantially identical 2-conductor signal transmission legs, each including a pair of input-output terminals and a pair of resistors, one resistor in each leg being connected between one terminal of that leg and one of said junctions, the other resistor in each leg being connected between the other terminal of that leg and the other of said junctions, and

a shunt resistance connected between said junctions,

said leg resistors all being of substantially the same value,

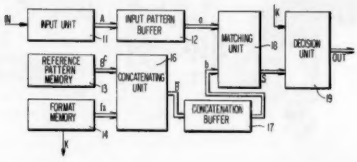
said shunt resistance having a value selected to provide a network attenuation ratio substantially equal to the difference in said standardized levels.

4,286,115

SYSTEM FOR RECOGNIZING WORDS CONTINUOUSLY SPOKEN ACCORDING TO A FORMAT

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,598
Claims priority, application Japan, Jul. 18, 1978, 53-87849
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD **4 Claims**



1. A system for recognizing an input pattern feature vector time sequence A(0, I) consisting of a certain number I of first through I-th input pattern feature vectors representative of an input word sequence consisting of first through k-th (K being representative of a predetermined integer) input word units selected from first through K-th word sets, respectively, as one of a plurality of reference word sequences, each word set consisting of at least one reference word unit selected from first through N-th (N being representative of a predetermined number) reference word units B^n+s (n being representative of each of 1 through N), each reference word sequence consisting of first through K-th reference word units selected from the respective word sets, said system comprising:

input pattern buffer memory means for memorizing at least a preselected plurality of successive input pattern feature vectors at one time;

reference pattern memory means for memorizing said reference word units as a plurality of reference pattern feature vector time sequences, respectively, and for producing said reference word units successively in a predetermined order;

similarity measure calculating means connected to said input pattern buffer memory means and said reference pattern memory means for calculating a plurality of elementary similarity measures S(p, q, n)'s between a plurality of elementary partial patterns A(p, q)'s and the successively produced reference word units, each partial pattern being segmented from said input pattern feature vector time sequence at a pair of smaller-numbered and greater-numbered segmentation points p and q so as to consist of (p+1)-th through q-th input pattern feature vectors;

format memory means for memorizing a format defined by said word sets;

word set specifying means connected to said format memory means for successively specifying said word sets in a prescribed order to make said format memory means produce the reference word units of the specified word sets; and

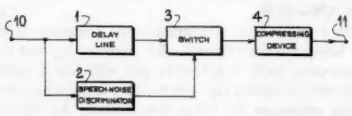
matching means connected to said similarity measure calculating means, said format memory means, and said word set specifying means for carrying out pattern matching between a plurality of specific partial pattern concatenations and said plurality of reference word sequences to decide said one reference word sequence by finding a maximum of sums of individual similarity measures S(p(k−1), p(k), n(k))'s (k being representative of each 1 through K) with each individual similarity measure selected, while a k-th word set is specified, from said plurality of elementary similarity measures with each reference word unit $B^{n(k)}$ selected from said k-th word set and with a k-th specific partial pattern A(p(k−1), p(k)) in each specific partial pattern concatenation selected from said plurality of elementary partial patterns.

4,286,116

DEVICE FOR THE PROCESSING OF VOICE SIGNALS

Jean-Claude B. Sadou, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 25, 1979, Ser. No. 78,805
Claims priority, application France, Sep. 29, 1978, 78 27922
Int. Cl.³ H04B *15/00*
U.S. Cl. 179—1 P **3 Claims**



1. Apparatus for processing input signals which comprise voice signals and, during periods of voice inactivity, unwanted noise signals, said apparatus functioning to remove substantially all of said noise signals and comprising:

(a) means, connected to the source of said input signals, for generating a control signal only when said input signals comprise voice signals;

(b) switching means, connected between the source of said input signals and the output of the apparatus and con-

trolled by said control signal, for closing a path between said source and said output;

(c) a delay line interposed between the source of said input signals and the input to said switching means, said delay line having a delay T, substantially equal to the response time of said control signal generating means; and

(d) an amplitude compression device in the path between the source of said input signals and said output, downstream of said delay line.

4,286,117

DANGER ALARM SYSTEM

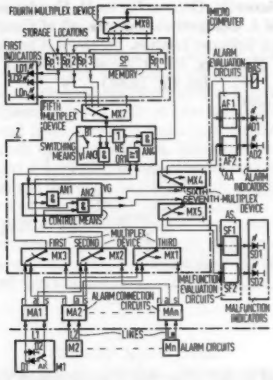
Karlheinz Schreyer, Wolfratshausen, and Peer Thilo, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 29,831

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817053

Int. Cl.³ H04M *11/04*

U.S. Cl. 179—5 R **9 Claims**



1. A danger alarm system comprising:

a plurality of alarm circuits operable to provide first signals representing a quiescent condition and second signals representing an alarm condition;

a plurality of signal lines each connected to a respective alarm circuit;

a plurality of alarm connection circuits each connected to a respective signal line and each having three outputs and each operable to provide a rest signal at a first output in response to a first signal, an alarm signal at a second output in response to a second signal and a malfunction signal at a third output in response to the absence of the first and second signals;

a memory including a plurality of storage locations each including an input and an output and each assigned to and operable to store the busy and non-busy state of a respective line;

a plurality of first indicators each connected to said output of a respective storage location and operable in response to a busy state to indicate seizure of the respective line; and

a plurality of synchronously operable multiplex devices, first, second and third ones of said multiplex devices sequentially connected to said alarm connection circuits to read said first, second and third outputs, respectively, of said plurality of alarm connection circuits,

said memory comprising:

input means including a fourth one of said multiplex devices sequentially connectible to said inputs of said memory;

switching means connected between said first and second multiplex devices and said fourth one of said multiplex devices and selectively operable in a first mode to pass said rest and alarm signals as busy state signals to said memory and in a second mode to block the passage of said rest signals to said memory,

output means including a fifth one of said multiplex devices connected to read the outputs of said memory and connected to said switching means, and

control means connected to said second and third multiplex devices and to said switching means, including first and second outputs, and operable in response to conjunct busy state and alarm signals to provide the alarm signal at said first output and in response to conjunct busy state and malfunction signals to provide the malfunction signal at said second output.

4,286,118

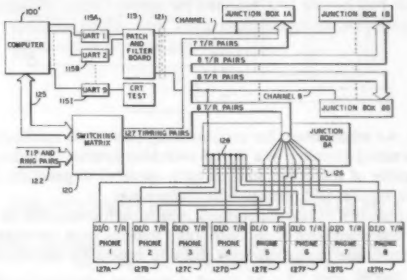
DATA DISTRIBUTION SYSTEM FOR PRIVATE AUTOMATIC BRANCH EXCHANGE

Joseph H. Mehaffey, Atlanta, and Aleksander Szlam, Marietta, both of Ga., assignors to Solid State Systems, Inc., Marietta, Ga.

Filed Jul. 2, 1979, Ser. No. 54,146

Int. Cl.³ H04M *1/56, 3/64;* H04Q *3/56, 3/64*

U.S. Cl. 179—18 AD **7 Claims**



1. In a private branch telephone exchange including a switching matrix for connecting a plurality of incoming trunk pairs to a plurality of stations, a controller responsive to the state of said switching matrix for storing a plurality of connection signals, each of said plurality of connection signals corresponding to connection of a particular one of said plurality of trunk pairs to a particular one of said plurality of stations, the improvement of:

a data distribution system comprising at least one data communication channel connecting said controller to at least two of said plurality of stations;

address defining means associated with each of said plurality of stations for providing a unique station address for each of said plurality of stations connected to said data communication channel;

said controller further comprising an addressing means for providing a plurality of addressing signals, one at a time, to said data communication channel, each of said addressing signals being followed in time by one of a plurality of data signals, said plurality of data signals corresponding to one of said plurality of connection signals; and

a display and control means associated with each of said plurality of stations for causing a display to provide a visible indication corresponding to said one of a plurality of connection signals in response to said plurality of data signals;

said display and control means comprising an addressable memory connected to said display responsive to a first particular one of said plurality of data signals to load a first address of said addressable memory, and further responsive to subsequent data signals of said plurality of data

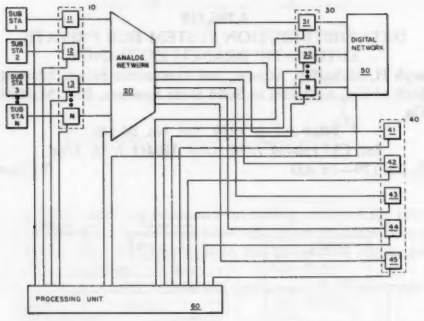
signals to load sequential addresses of said addressable memory.

4,286,119

ARRANGEMENT FOR CONCENTRATING PULSE CODE MODULATION PROCESSING CIRCUITS IN A DIGITAL TELEPHONE OFFICE

David J. Stelte, Lombard, and Alex W. Kobylar, Chicago, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Nov. 9, 1979, Ser. No. 92,873
Int. Cl.³ H04Q *3/60*
U.S. Cl. 179—18 FC **11 Claims**



1. An arrangement for concentrating pulse code modulation processing circuitry in a digital switching system, including a plurality of subscriber stations each operated to generate off-hook signals, said arrangement comprising:

a plurality of line supervisory means each connected to an associated one of said subscriber stations, each operated in response to said off-hook signal to generate a supervisory signal;

a processing unit connected to said plurality of line supervisory means, operated in response to said plurality of supervisory signals to generate a plurality of supervisory enable signals and a plurality of modulation enable signals;

connection means connected to said plurality of line supervisory means;

a plurality of pulse code modulation means connected to said processing unit, each operated in response to an associated one of said modulation enable signals to connect to said connection means;

each of said plurality of line supervisory means further operated in response to an associated one of said supervisory enable signals to connect to said connection means; and

said connection means operated in response to connection of said line supervisory means and said pulse code modulation means to connect said line supervisory means to said pulse code modulation means.

4,286,120

CURRENT REGULATED PULSE DIALER CIRCUIT

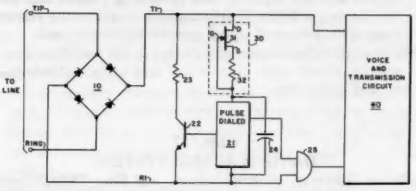
John D. Sublette, Huntsville, Ala., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Oct. 15, 1979, Ser. No. 84,960
Int. Cl.³ H04M *1/31*
U.S. Cl. 179—90 K **5 Claims**

1. A current regulated pulse dialer circuit for use in a pulse dialing telephone, including digit signaling means and a line connection, said pulse dialer circuit comprising:

pulse dialing means connected to said digit signaling means and to said line connection, operated in response to a digit signal to decode said digit signal and generate pulses, representative of said digit on said line connection; and

a current regulator connected to said pulse dialing means and to said line connection operated to increase the impedance across said line connection through said pulse dialing means.

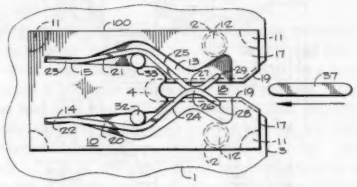


4,286,121

TELEPHONE LINE CUTOVER APPARATUS AND SWITCH

Edward J. Olszewski, Ottawa; Dieter H. Hundrieser, Manotick, and Harold J. Ostapovitch, Lachine, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 25, 1979, Ser. No. 88,011
Int. Cl.³ H04Q *1/14*
U.S. Cl. 179—98 **4 Claims**



1. A manual switch apparatus in combination with an equipment frame having a back plane including back plane conductors, a plurality of circuit board locations distributed across a face of the back plane, each of the circuit board locations for removably lodging a circuit board therein, substantially perpendicular to the face of the back plane, and for providing electrical connections between the circuit board and a predetermined plurality of the back plane conductors, the manual switch apparatus comprising:

an elongated control member of a length more than spanning the plurality of circuit board locations;

a plurality of aligned slot formations distributed across and carried adjacent said face of the back plane, for removably retaining the elongated control member adjacent the circuit board locations;

a switch means, having first and second states, mounted at a predetermined location on each of a plurality of circuit boards lodgable within the plurality of circuit board locations, each switch means including at least one switch member for contacting the elongated control member;

whereby, upon insertion of each one of the plurality of circuit boards into the equipment frame, the associated switch means is mechanically switched to said second state in response to contact of the switch member against the elongated control member, and whereby removal of the elongated control member is restricted to a direction substantially in parallel relationship with the face of the back plane, such removal causing each of the switch means to be switched from the second state to the first state through sequential loss of contact by said switch members with the elongated control member.

4,286,122

ACOUSTIC ELECTRICAL CONVERSION DEVICE WITH AT LEAST ONE CAPACITOR ELECTRET ELEMENT CONNECTED TO AN ELECTRONIC CIRCUIT

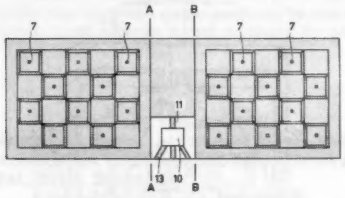
Wilhelmus H. Iding, Breda, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 13, 1979, Ser. No. 20,152

Claims priority, application Netherlands, Mar. 13, 1978, 7802688

Int. Cl.³ H04R *19/00, 21/02*

U.S. Cl. 179—111 E **20 Claims**



1. A device for the conversion of acoustic vibrations into electrical oscillations and vice versa, comprising at least one capacitor electret element provided with at least one foil of a dielectric polymer material with at least one electrode in the form of a metal layer arranged thereon, a diaphragm with a second electrode disposed thereon, said one foil comprising one surface part lying inside the electret element and a second surface part of the foil extending beyond the electret element, and an integrated semiconductor device disposed on said second surface part of the foil and with the metal layer being electrically connected to one terminal of the semiconductor device via a conductor which is disposed mainly on the second surface part of said one foil.

4,286,123

BRIDGE AMPLIFIER

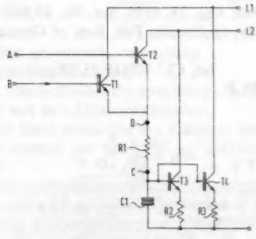
Peter F. Blomley, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,647

Claims priority, application United Kingdom, Nov. 8, 1978, 43602/78

Int. Cl.³ H03F *3/62*

U.S. Cl. 179—170 T **13 Claims**



1. A bidirectional amplifier adapted to be connected to a two-wire line and to signal generating and receiving circuits, wherein said amplifier receives power from said line and wherein said amplifier is adapted such that current flows in the same direction from said circuits regardless of the polarity of said two-wire line, said amplifier comprising:

first and second common points;

first, second, third and fourth transistor means each having first, second and third terminals;

said first terminals of said first and fourth transistors being coupled to one line of said two-wire line, said first terminals of said second and third transistors being coupled to the other line of said two wire-line;

said second terminals of said first and second transistors being coupled to said first common point;

said third terminals of said third and fourth transistors being coupled to said second common point;

first resistive means coupled to said first and second common points such that input signals from said two-wire line are reproduced across said first resistive means with the same relative polarity between said first and second common points;

first means coupling said first and second common points to said receiving circuits;

second means coupling said third terminals of said first and second transistor means to said signal generating circuits such that input signals from said signal generating circuits are reproduced on said two-wire line;

a third common point;

second resistive means connected between said second terminal of said third transistor means and said third common point; and

third resistive means connected between said second terminal of said fourth transistor means and said third common point; and

capacitor means connected between said second and third common points, said third common point providing a direct voltage output point.

4,286,124

ARRANGEMENT FOR SECURING PANELS TO A CONSOLE

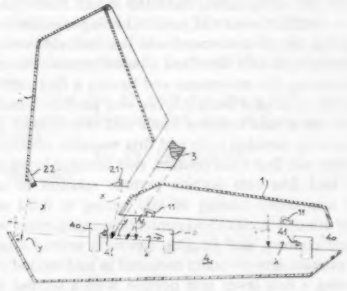
Baruch Guttmann, 15 Hatanaim St., Beney Beraq, Israel

Filed Jul. 17, 1979, Ser. No. 58,373

Claims priority, application Israel, May 16, 1979, 57314

Int. Cl.³ H04M *1/02;* **H05K** *5/02*

U.S. Cl. 179—179 **4 Claims**

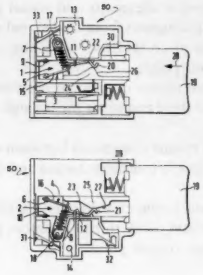


1. In an apparatus having a base, at least two covering panels and means for securing such panels against relative displacement, the improvement wherein said means for securing comprise projections having oblique contact faces, wherein said base has parts which correspond to said projections to interengage matingly with said projections, and including an elongated, profiled member provided which in cross section defines an angle which corresponds with an angle at which said two panels extend relative to one another, said elongated member being wedgeably insertable between said two panels in space defined between them to exert pressure on said two panels urging said projections and said parts into mating position preventing disengagement.

4,286,125
ELECTRIC SWITCH WITH TWO SWITCHING PARTS ACTING AT DIFFERENT TIMES

Alois Schäffeler, and Uwe Stratmann, both of Spaichingen, Fed. Rep. of Germany, assignors to J & J Marquardt, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,829
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2838934
Int. Cl.[3] H01H *19/00*
U.S. Cl. 200—6 B 8 Claims

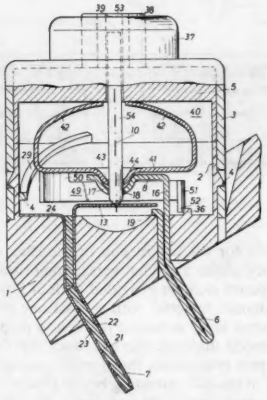


1. An electric switch comprising a switch housing having a first chamber, a first contact arm in said housing chamber, bearing means pivotally supporting said first contact arm in said housing, said first contact arm having a first lever arm portion with a first movable contact thereon and an opposite second lever arm portion, a first fixed contact in said housing opposite to said first movable contact in a position to be engaged by said first movable contact when said first contact arm is pivoted, a loading spring mounted in said housing and connected to said first lever arm portion biasing said first lever arm portion in a direction to move said first movable contact into engagement with said first fixed contact, an actuator mounted in said housing for movement and having a first cam portion engageable with said second lever arm portion which in the first position of said actuator holds said first contact arm in a first operating position with said first movable contact spaced away from said first fixed contact, said actuator being movable so that said first cam portion permits rotation of said first contact arm under biasing of said spring to hold said first movable contact in electrical contacting engagement with said first fixed contact, said housing having a second chamber, a second contact arm pivotally mounted in said second chamber and having a first lever arm portion with a second movable contact thereon, said housing having a second fixed contact in said second chamber, said second contact arm having an opposite second lever arm portion, said actuator including a second cam portion engageable with said second lever arm portion of said second contact arm and holding said second lever arm portion of said second contact arm so that said second movable contact is out of engagement with said second fixed contact, a second loading spring connected to said first lever arm portion of said second contact arm, said second cam portion of said actuator permitting faster movement of said second contact arm than said first contact arm so that said second contact arm is moved to engage said second fixed contact with said second movable contact faster than said first movable contact engages said first fixed contact.

4,286,126
IGNITION SWITCH

Werner E. Berginski, Werdohl-Eveking, Fed. Rep. of Germany, assignor to Firma Leopold Kostal, Lüdenscheid, Fed. Rep. of Germany

Filed Jun. 11, 1979, Ser. No. 47,334
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827400
Int. Cl.[3] H01H *19/00, 27/00*
U.S. Cl. 200—11 C 16 Claims



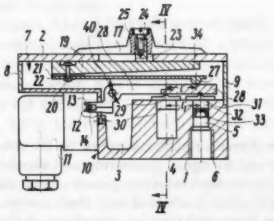
1. In an ignition switch having a socket plate provided with a generally circular array of contacts and a central contact, and a switching wheel rotatable in a forward direction about an axis coincident with the axis of said array, said switching wheel including contact springs sequentially engageable with the contacts of said array when said wheel is rotated in said forward direction and a central contact engaging the central contact of said socket plate, the improvement comprising:

said central contacts being in the form of spherical shell segments, one nested within the other.

4,286,127
PRESSURE MEDIUM ACTUATED SWITCH

Willi Quitoschinger, Maybachstrasse 6, 7120 Bissingen, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 69,060
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837739
Int. Cl.[3] H01H *35/38*
U.S. Cl. 200—83 J 34 Claims



1. A pressure medium actuated switch for operating a switch element, the switch including actuating means adapted to be acted upon by a pressure medium and actuating a switch element upon reaching a predetermined switching point, characterized in that the actuating means includes a first lever means

operatively connected with the switching element, means pivotally mounting the first lever means for movement about a pivot axis extending transversely with respect to a longitudinal axis of said first lever means, an operating element operatively connected with said first lever means and applying a first force thereto, a leaf spring means applying a second force to said first lever means that acts in a direction opposing said first force when it moves, counter bearing means mounted so as to be displaceable by the leaf spring means and transmitting said second force to said first lever means, and moveable means displaceably mounting said leaf spring means and said counter bearing means so as to be displaceable longitudinally of the first lever means toward and away from said pivot axis and so as to alter the magnitude of a torque produced by said second force relative to an opposite torque produced by said first force.

4,286,128
ELECTRIC GAS-SWITCH

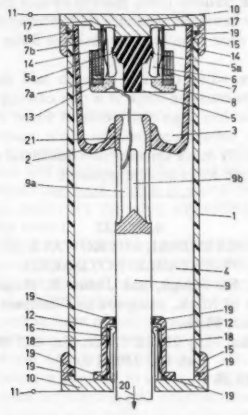
Stanislaus Ruffieux, Baden, and Ekkehard Schade, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company Ltd., Baden, Switzerland

Filed Apr. 17, 1978, Ser. No. 897,150

Claims priority, application Switzerland, Apr. 29, 1977, 5349/77

Int. Cl.³ H01H *33/70, 33/82*

U.S. Cl. 200—148 R **9 Claims**



1. An electric gas-switch, comprising:
a sealed switching chamber;
a partition which divides the switching chamber into an arc chamber and an additional chamber;
a central pin fixed within the arc chamber and having a free end, the central pin being of an electrically insulating material;
a first switch part stationary with respect to the switching chamber which at least partially embraces the central pin;
a coil which surrounds the first switch part and through which coil a cut-off current flows;
an annular intermediate electrode which surrounds the central pin at a distance and is in close proximity to the free end of the central pin; and
a second switch part having a free end in the shape of a nozzle, the second switch part being movable with respect to the first, stationary switch part and having a plurality of apertures providing communication between the arc chamber and the additional chamber, the nozzle of the second switch part surrounding the free end of the central pin when the second switch part contacts the first switch part.

4,286,129
KEYBOARD HAVING SUDDEN TRIP TACTILE EFFECT KEYS

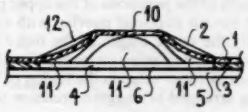
Julien Petit, Paris, France, assignor to Orega Electronique et Mecanique, France

Filed Nov. 20, 1979, Ser. No. 96,007

Claims priority, application France, Nov. 24, 1978, 78 33291

Int. Cl.³ H01H *21/40, 13/22*

U.S. Cl. 200—159 B **4 Claims**



1. A keyboard device comprising a flexible foil having protuberances and being conductive at least under these protuberances, said flexible foil being placed above a printed circuit board having conducting contact zones at least below said protuberances, and wherein said protuberances of said flexible foil are made of two parts:
a central upper part which is approximately flat and parallel to said flexible foil;
and a lateral part connecting said central upper part to the base of the protuberance, said lateral part having an approximately frusto conical shape, the larger part of said cone being its base joining said flexible foil and said protuberance, and its smaller part being its upper part joining said lateral part and said central upper part, said frusto-conical lateral part comprising several counter-parts which produce hollowed shapes related to the conical surface of said lateral part;
said upper and lateral parts being so dimensioned that a pressure exerted on said upper part keeps it parallel to and separated from said flexible foil, but produces a sudden and reversible deformation of said lateral part so that said hollowed counter-parts touch corresponding contact zones on the printed circuit board.

4,286,130
LOW VOLTAGE CIRCUIT BREAKER WITH SUBDIVIDED INSULATING HOUSING

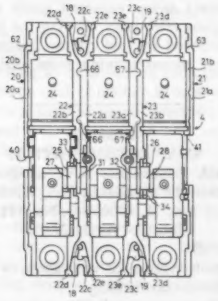
Werner Troebel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,207

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1978, 2802554

Int. Cl.³ H01H *9/02*

U.S. Cl. 200—303 **6 Claims**



1. In a low voltage circuit breaker having an insulating

material housing divided into an upper part and a lower part along a parting gap and having partitions between adjacent breaker pole channels meeting at the parting gap, the partitions overlapping each other stepwise, each breaker pole channel comprising a pole path having a terminal, a stationary switch contact, a movable switch contact, a flexible connector, means for opening the contacts, and a second terminal, there being a drive shaft for actuating the movable switch contacts coupled to a mechanism located in one of the pole channels, the improvement comprising:

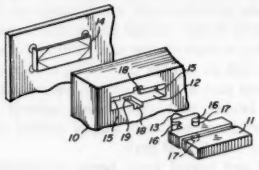
the entire length of the partitions of the upper part and of the lower part having step-wise overlap with each other and substantially the entire length of the outer walls of both housing parts having stepwise overlap with each other, interruptions of the overlap in the region of the two outer walls being arranged in staggered relation to each other.

4,286,131

PUSHBUTTON SWITCH ASSEMBLY

Stephen P. Kopish, Schaumburg, and Richard Costantino, Rolling Meadows, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 30, 1979, Ser. No. 71,324
Int. Cl.[3] H01H *3/12;* H02B *1/02*
U.S. Cl. 200—340 **14 Claims**



1. An electrical switch assembly, comprising:

chassis means for housing the electrical contacts of a switch, said chassis having a wall with at least one through opening therein;

at least one switch actuator means mounted in said chassis wall opening, said switch actuator being attached to said chassis by flexible retaining means fixed to one of said chassis wall and said switch actuator means and having at least one flexible extending portion cooperating with a recess in the other of said chassis wall and said switch actuator means to form a hand-insertable snap-in subassembly, said flexible retaining means, besides attaching said switch actuator means to said chassis, also biasing said switch actuator means into a first predetermined position with respect to said chassis wall and permitting movement of said actuator means into a second predetermined position with respect to said wall while keeping said actuator means attached to said chassis; and

electrical contact means mounted inside said chassis, said actuator means selectively altering the electrical characteristics produced by said contact means in response to said actuator means moving from said first to second positions.

4,286,132

SNAP-ACTION SWITCH

Harry Greenwald, Whitestone, N.Y., assignor to Greenwald Electro-Mechanical Consultants, Inc., Whitestone, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,410
Int. Cl.[3] H01H *21/04*
U.S. Cl. 200—67 D **3 Claims**

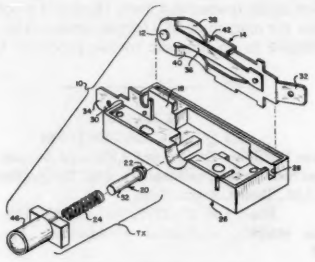
1. A snap-action switch for activation by a slow moving switching mechanism comprising:

a single over-the-center toggle-like spring armature disposed to snap between a first position and a second position, said armature carrying a movable contact, said armature resisting movement until moved past its deadband zone whereafter said armature snaps from said first position to said second position;

a pushing member positioned to move said armature off said first position;

a switch activator adapted to be moved by said slow moving switching mechanism;

spring means resiliently coupled between said switch activator and said pushing member, said spring means transmitting force from said switch activator to said pushing member and absorbing energy as said switch activator is moved; the resilient force exerted by said spring means at the point where said armature starts to move through said deadband zone equalling the resistive force of said armature;



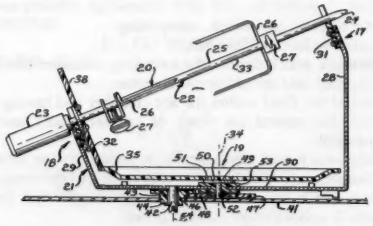
said armature when moving through said deadband zone reducing its resistive force at a rate causing said resistive force to be less than said resilient force of said spring means, the unbalanced resilient force causing said armature to rapidly move through said deadband zone and snap said armature to its second position.

4,286,133

BI-ROTATIONAL MICROWAVE OVEN TURNTABLE/ROTISSERIE

Eystein Einset, St. Joseph, and James R. Hageman, Berrien Springs, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 29, 1979, Ser. No. 42,770
Int. Cl.[3] H05B *6/78*
U.S. Cl. 219—10.55 F **22 Claims**



1. Structure for movably carrying food products in a microwave oven cavity for improved subjection thereof to microwave energy therein, said carrying structure comprising:

a spit;

support means for supporting said spit in said cavity for rotation about a first, spit axis;

drive means for rotatively turning said support means about a second, fixed axis;

a turntable for supporting food products;

means for rotatively mounting said turntable to said support means for revolving about a third axis spaced from said second axis;

means for rotatively driving said turntable about said second axis while revolving about said third axis; and

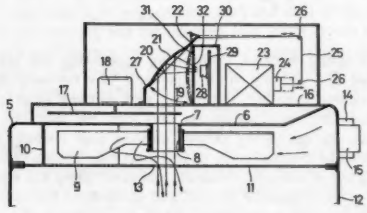
means driven by the turntable for causing said spit to rotate about said first axis as an incident of said turntable being rotatively driven about said second axis.

4,286,134

TEMPERATURE MEASURING ARRANGEMENTS FOR MICROWAVE OVENS

Takeshi Nakata; Takashi Watanabe, and Kiyoshi Harada, all of Otsu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jul. 9, 1979, Ser. No. 55,759
Claims priority, application Japan, Jul. 13, 1978, 53-97531[U]
Int. Cl.³ H05B *6/68*
U.S. Cl. 219—10.55 B **16 Claims**



1. An electronic oven comprising:

a cavity,

an infrared converging means having a reflective convergent surface and adapted to reflect and converge infrared rays radiated from food heated in said cavity,

a supporting means for movably supporting said infrared converging means,

an infrared detector element located in the vicinity of the point where infrared rays are converged by said infrared converging means, and adapted to convert the infrared rays into electrical signals,

a plate disposed in front of said infrared detector element, an infrared entrance port being formed in said plate which said reflective convergent surface of said infrared converging means is adapted to cover, and

a moving means for moving said infrared converging means to a first position as to reflect and converge infrared rays onto said infrared detector element when the temperature measurement operation is performed, and to a second position as to close said infrared entrace port when the temperature measurement operation is not performed.

4,286,135

COMPACT MICROWAVE ISOLATOR

Jerome J. Green, Lexington, and Daniel J. Masse, East Walpole, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 9, 1979, Ser. No. 83,149
Int. Cl.³ H05B *6/70*; H01P *1/365*
U.S. Cl. 219—10.55 F **8 Claims**

8. In combination:

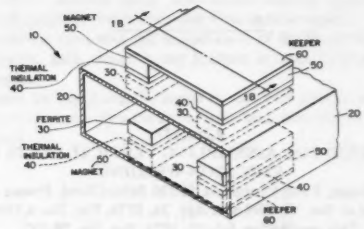
a source of microwave energy;

a heating chamber;

a three-sided waveguide having a pair of opposite narrow walls connected by a broad wall and adapted to be connected between said energy source and said heating chamber and disposed such that said heating chamber provides a second broad wall for said waveguide;

at least one ferrite bar positioned to be in contact with one of said broad walls and disposed longitudinally within said waveguide in the region where gyroresonance absorption takes place;

a plurality of magnets disposed on the outside surface of said



broad walls to provide a transverse magnetic field through said ferrite bar; and

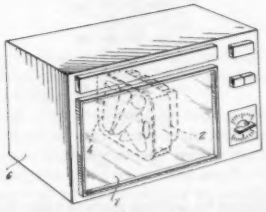
means for thermally insulating said magnets positioned between said outside surface and said magnets.

4,286,136

COOKING CONTAINER FOR MORE EFFICIENT COOKING IN A MICROWAVE OVEN

Stanley I. Mason, Jr., 61 River Rd., Weston, Conn. 06880

Filed Dec. 10, 1979, Ser. No. 101,630
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 E **19 Claims**



1. A cooking container for use in microwave cooking of food in a microwave oven, said container including:

a base and integral upwardly extending sidewalls and end portions to define an open-top food container, said sidewalls and end portions extending upwardly from the periphery of said base, the length of said end portions being no greater than the length of said sidewalls,

at least one of said end portions having at least one vertical support extending downwardly from said one end portion, but extending no further than the plane of said base,

said container being made of material which is transparent to microwave radiation,

said container being so dimensioned such that (1) its center of gravity, when said container is in a vertical position with said vertical support being supported on a supporting surface in said microwave oven and said base of said container being substantially perpendicular to said supporting surface in said microwave oven, is proximate to said base and not substantially aligned above said vertical support to cause said container to be unstable and (2) the center of gravity of said container and contained food is more nearly centered over said vertical support when food is in said container to provide stability to said container in its said vertical position supported on said vertical support,

whereby food can be cooked in a microwave oven in said vertical position of said container for absorbing an optimum quantity of both direct microwave radiation and

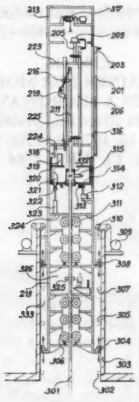
microwave radiation reflected from the microwave oven surfaces.

4,286,137

METHOD FOR ASSEMBLING VERTICAL DUCTS BY ELECTRON-WELDING

Paul Thome, 8 rue Coutureau, 92210 Saint-Cloud, France

Division of Ser. No. 899,681, Apr. 24, 1978, Pat. No. 4,196,334. This application Jul. 16, 1979, Ser. No. 58,032
Claims priority, application France, May 2, 1977, 77 13162
Int. Cl.[3] B23K *15/00*; E21B *19/20*
U.S. Cl. 219—121 EC **8 Claims**



1. An installation for welding ducts to a pipe-line, said installation comprising:

inner equipments for said ducts, each comprising means for vacuum-tight connection with the inside of a duct and means protruding from the duct for vacuum tight connection with the pipe-line;

an equipping station comprising means for placing one of said inner equipments in each successive duct and for tightly connecting said equipment to said duct, thereby closing an inner vacuum tight space inside the duct;

transfer means for transferring said duct and inner equipment from said equipping station to a welding station and for positioning it in said welding station in alignment and abutment end to end with the pipe-line;

means for sealingly connecting the protruding means of said inner equipment in the welding station with the pipe-line inside the pipe-line, thereby closing a welding space across the abutted ends of said duct and pipe-line inside said duct and pipe-line;

pumping means for evacuating said inner space during said transfer, as well as said welding space;

further transfer means for removing said inner equipment from said duct and returning it from said welding station back to said equipping station;

a welding apparatus for welding together the abutted ends of said pipe-line and duct;

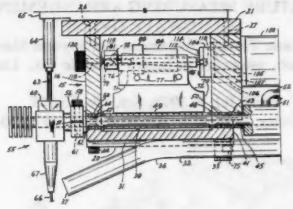
and means for removably connecting said welding apparatus to the duct and pipe-line outside said duct and pipeline in said welding station.

4,286,138

WELDING METHODS AND APPARATUS INCLUDING ALTERNATE WELD METAL DEPOSITIONS ALONG OPPOSITE SIDES OF A WELD

Clyde M. Slavens, and Edward A. Clavin, both of Houston, Tex., assignors to Midcon Pipeline Equipment Co., Houston, Tex.

Filed Aug. 1, 1979, Ser. No. 62,685
Int. Cl.[3] B23K *9/09*
U.S. Cl. 219—137 R **19 Claims**



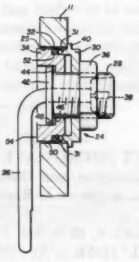
16. Welding method, comprising supporting the welding electrode of a welding torch adjacent a joint between objects to be welded together, oscillating said welding electrode in back and forth motions across said joint by operation of a motor-driven oscillating means, moving said welding torch and electrode longitudinally of said joint, providing a pulsating welding current to said electrode and controlling the welding current pulse frequency thereof, and controlling the operation of said motor-driven oscillating means in response to the pulses of said welding current such that welding current pulses in controlled number occur at the ends of each said back and forth motions of said electrode, whereby weld metal droplets in controlled number are deposited only at opposite sides of said joint in parallel paths to flow together to form a weld across said joint, no weld metal droplets being deposited between said parallel paths.

4,286,139

COUPLING ASSEMBLY FOR HEATING ELEMENT

Eugene D. Taylor, Kenosha, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 26, 1979, Ser. No. 106,576
Int. Cl.[3] H05B *3/02, 3/82*; F02N *17/06*
U.S. Cl. 219—208 **1 Claim**



1. In an electric heater assembly which is mountable in an opening through a wall in an engine block, said heater assembly including an electric heating element sized and shaped for insertion into the engine block through said opening in said wall, the improvement comprising:

a coupling assembly for mounting said heating element to said opening through said engine block wall, said coupling assembly including an elongated clamping sleeve having one end fixed to said heating element, said clamping sleeve

being sized and shaped to extend into the engine block opening in spaced relationship thereto, said sleeve being of a length such that the other end thereof extends outwardly of the engine block through said opening when the heating element is inserted into the engine block, and a circumferential sealing ring on said one end of the clamping sleeve;

an annular guide sleeve of a diameter closely conforming to the diameter of the engine block opening, said guide sleeve being slidable on said clamping sleeve and closely fitting into said opening, said circumferential sealing ring limiting the movement of said guide sleeve toward said heating element, a sealing gasket mounted between said guide sleeve and said sealing ring, said guide sleeve having a first annular reduced diameter shoulder portion forming a seat, a resiliently compressible annular seal means mounted on said seat, an annular retainer ring mounted on said seat outwardly of said seal means, said seal means and retainer ring closely fitting said opening;

means mounted on said clamping sleeve for pressing said retainer ring against said seal means to compress the seal means into tight engagement with the wall of the engine block opening and for pressing said guide sleeve toward said sealing ring to compress the sealing gasket therebetween, said pressing means including an annular clamping ring axially movable on said clamping sleeve toward said retainer ring to press said retainer ring and guide sleeve, said annular clamping ring including a rim portion that abuts against the outer side of the engine block wall when said heater assembly is installed in said engine block opening, and a clamping member mounted on said clamping sleeve for preventing movement of said clamping ring away from said retainer ring; and

said guide sleeve including a second annular shoulder portion having a uniform diameter greater than said first shoulder portion but slightly less than the diameter of the opening in the engine block, said second annular shoulder portion having an elongated longitudinal extent such that said second annular shoulder portion is partially disposed within said engine block when said heater assembly is installed in said engine block opening to prevent said heater assembly from tilting with respect to the longitudinal axis of said opening in said engine block.

4,286,140

APPARATUS FOR RAISING A LIQUID TO A GIVEN TEMPERATURE

Roger Dewulf, Bures sur Yvette; Jean-Luc Denis, Sceaux; Michel Germain, Marcoussis, and Christian Lecointre, Carnetin, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 7, 1979, Ser. No. 18,335
Claims priority, application France, Mar. 21, 1978, 78 08115
Int. Cl.[3] F24H *1/22*
U.S. Cl. 219—306 **6 Claims**

1. An apparatus for raising a liquid to a given temperature and for controlling and regulating in a constant and accurate manner the temperature to which the liquid has been raised, wherein said apparatus comprises:

a tight vertical cylindrical enclosure defining a cylindrical wall, including a lower wall and an upper wall;

a vertical tube located within and spaced from said enclosure, said tube having a sealed base and an upper end connected to said upper wall of said enclosure;

a heating resistor within said tube;

a first ferrule concentric to said tube and located between said tube and said enclosure adjacent to said tube, said first ferrule having a free upper portion and a lower portion which is connected to said lower wall of said enclosure;

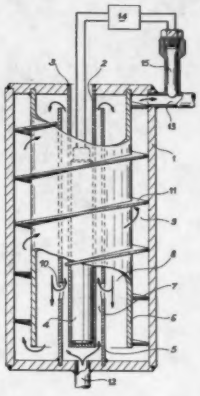
a second ferrule concentric to said tube and located between said tube and said enclosure adjacent to said cylindrical wall of said enclosure, said second ferrule having a free lower portion and an upper portion connected to said upper wall of said enclosure;

said first ferrule and said second ferrule successively defining from said tube and said cylindrical wall of said enclosure a first thin annular space, a second annular space and a third annular space, said second annular space being substantially wider than said first annular space;

means for rendering the temperature of the liquid homogeneous, said means being located in said third annular space;

means for supplying the liquid to said first annular space;

means for extracting the liquid from said third annular space; and



means for controlling and maintaining constant the temperature at which the liquid leaves the apparatus, wherein said apparatus further comprises:

a plurality of radially distributed orifices formed in said lower portion of said first ferrule separating said first annular space from said second annular space, said means for supplying the liquid to said first annular space being in said lower wall of said enclosure to circulate the liquid upwards in said first annular space, downwards in said second annular space and then upwards in said third annular space, and the length of said resistor being smaller by at least one quarter of the height of said tube, whereby said first annular space, said second annular space, said orifices and said heating resistor form a thermosiphon.

4,286,141

THERMAL STORAGE METHOD AND SYSTEM UTILIZING AN ANHYDROUS SODIUM SULFATE PEBBLE BED PROVIDING HIGH-TEMPERATURE CAPABILITY

Calvin D. MacCracken, Englewood, N.J., assignor to Calmac Manufacturing Corporation, Englewood, N.J.

Filed Jun. 22, 1978, Ser. No. 918,159
Int. Cl.[3] F24H *7/04;* H05B *1/00*
U.S. Cl. 219—365 **7 Claims**

1. A thermal storage unit for use in heating living space comprising:

a high temperature resistant container having a bottom with multiple openings therein,

a pebble bed within said container supported by said bottom,

said pebble bed having interconnecting voids among the pebbles in said bed,

said pebbles being formed of compressed anhydrous sodium sulfate particles,

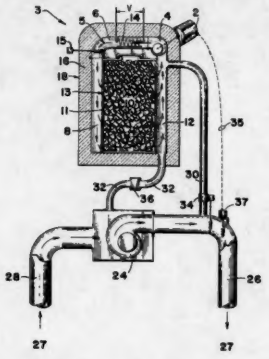
said high temperature resistant container being arranged to permit air flow to pass upwardly through said openings in

said bottom and upwardly through the interconnecting voids in said pebble bed,

thermally insulated walls surrounding said pebble bed container and said storage unit being arranged for permitting air flow to return downwardly from the top to the bottom of said container,

an electrical resistance heater element mounted within said insulated walls and positioned below said pebble bed container for causing, when heated, thermogravitational circulation of air to occur passing upwardly through said openings and through said interconnecting voids and returning downwardly for transferring heat energy from said heater element into said pebble bed,

said pebble bed storing between 11,000 and 22,000 Btu's of heat energy per cubic foot of said pebble bed at a bed temperature up to 600° F. and being capable of storing



between 28,000 and 56,000 Btu's of heat energy per cubic foot of said pebble bed at a bed temperature up to 1,200° to 1,500° F.,

said insulated walls having an inlet and an outlet for permitting air to flow from the living space to and from said pebble bed,

said inlet communicating with the openings in the bottom of said pebble bed container and said outlet communicating with an outflow from said pebble bed container,

a blower associated with said inlet for blowing said from said inlet from the living space into communication with the bottom of said pebble bed container for heating the air, with the heated air flowing through said outlet for returning into the living space, and

movable damper means operatively associated with said blower for controlling the operation.

4,286,142

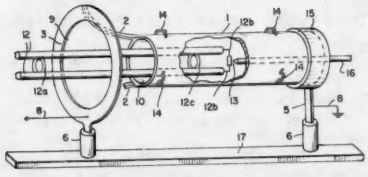
ELECTRIC TUBE FURNACE

Raymond E. Taylor, West Lafayette, Ind., assignor to Theta Industries, Inc., Port Washington, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,015

Int. Cl.³ H05B *3/08*

U.S. Cl. 219—390 **7 Claims**



1. Warp resistant high temperature electric tube furnace comprising a rigid metal heating element tube having open ends and a supporting electric terminal ring coaxially disposed and attached adjacent to each end of said tube, each said ring having an inside diameter at least as large as the inside diameter of said tube and at least one said ring being tandemly spaced from said tube and remotely, compressibly attached through a plurality of flexible elongated rectangular metal strip connectors which are symmetrically spaced about the periphery of said tube and radiate to said remotely attached ring.

4,286,143

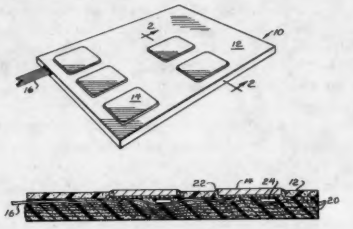
HEATER ASSEMBLY

Thomas D. Tadewald, La Crosse, Wis., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 939,764, Sep. 5, 1978. This application Nov. 13, 1979, Ser. No. 93,476

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—443 **7 Claims**



1. A direct contact heater plate assembly adapted to be periodically and sequentially exposed to containers to be heated and to a hostile atmosphere of steam or very hot water comprising a plurality of superposed laminations which are bonded to each other and to at least one heater portion, said at least one heater portion having a heating means therein and being positioned in a cut-out area formed in at least the uppermost of said plurality of laminations, said at least one heater portion having an upper container contacting surface being surrounded on all its sides by portions of said laminations defining the sides of said cut-out area, said at least one heater portion overlying and being bonded to a portion of at least one lower layer and said uppermost layer of said plurality of laminations, and said at least one heater portion having a greater thermal conductivity through the portion thereof which, during use, is intermediate said heating means therein and the upper container contacting surface thereof than the thermal conductivity of the uppermost laminations which surround said heater portion and are located above the said at least one layer to which the heater portion is bonded.

4,286,144

ENCODER FOR POSTAGE METER

Philip Pollak, Jr., Westport; Keith E. Schubert, Rowayton, and John L. Lorenzo, Southbury, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 28, 1979, Ser. No. 108,061

Int. Cl.³ G07G *1/00*

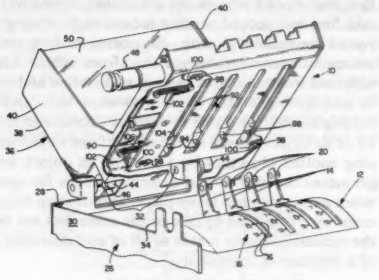
U.S. Cl. 235—101 **9 Claims**

1. An encoder for a postage meter having a lever which is movable between a plurality of postage value selecting positions, said encoder comprising:

(a) framework adapted for removably mounting said encoder in operating relationship with respect to said postage meter; and

(b) means for monitoring movement of said postage meter lever when said encoder is mounted in said operating

relationship, said monitoring means including means for providing an electrical signal which varies in response to



movement of said postage meter lever from one of said positions to another of said positions.

4,286,145

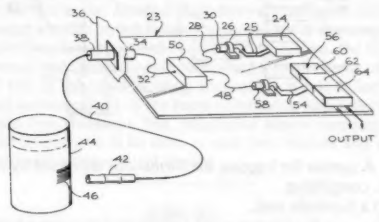
FIBER OPTIC BAR CODE READER

John P. Palmer, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Feb. 20, 1980, Ser. No. 123,039

Int. Cl.³ G06K *7/10, 7/14*

U.S. Cl. 235—454 **23 Claims**



1. An optical information reader comprising:

probe means effective to emit optical signals and receive reflected optical signals;

a single optical fiber having two ends, coupled at one end to said probe means for bidirectional transmission of optical signals;

optical coupler means having three ports, the first of said ports being coupled to the other end of said fiber;

optical signal generating means coupled to the second port of said coupler means in order to provide signals for emission from said probe; and

optical signal receiving means coupled to the third port of said coupler means in order to sense reflected signals received by said probe.

4,286,146

CODED LABEL AND CODE READER FOR THE CODED LABEL

Takeshi Uno; Hirotada Ueda, both of Sayama; Sadahiro Ikeda, Tokyo; Masakazu Ejiri, Tokorozawa, and Shinji Matsuoka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

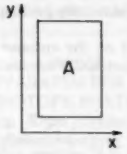
Continuation of Ser. No. 762,148, Jan. 24, 1977, abandoned. This application Jan. 12, 1979, Ser. No. 3,011

Claims priority, application Japan, Feb. 6, 1976, 51/11478

Int. Cl.³ G06K *7/10, 19/06, 9/00*

U.S. Cl. 235—456 **32 Claims**

1. A coded label comprising at least one code pattern to be read by a code reader in which segments having a specific shape and assuming either of first and second physical characteristics different from each other are arranged in a plurality of rows and a plurality of columns, and an area of the coded label surrounding said code pattern having said second physical characteristic, at least one segment of said first physical char-



acteristic being arranged in each of both end rows of said code pattern.

10. The coded label according to claim 1, wherein the numbers of said segments of said first state arranged in respective columns are equal to each other.

4,286,147

IN-FOCUS DETECTING DEVICE

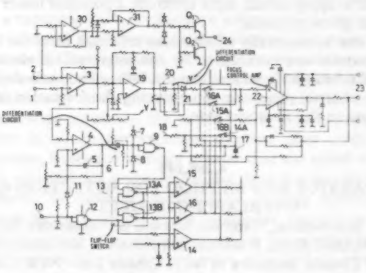
Hiroaki Tsuboi, and Toshihiko Hosaka, both of Tokorozawa, Japan, assignors to Universal Pioneer Corporation, Tokyo, Japan

Filed Jul. 19, 1979, Ser. No. 58,647

Claims priority, application Japan, Jul. 19, 1978, 53-88000; Jul. 19, 1978, 53-88002

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **14 Claims**



1. An in-foucs detecting device for a lens of an optical video disk player comprising; light quantity detecting means, comparator means for comparing the output of said light quantity detecting means with a reference voltage; switch means controlled by the output of said comparator means, and means for preventing said lens from contacting a disk being played on said video disk player.

4,286,148

IMAGE INTENSIFIER TUBE WITH PHOTOCATHODE PROTECTIVE CIRCUIT

Hubertus E. L. Kamps, and Christiaan J. G. H. Wulms, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 861,723, Dec. 19, 1977, abandoned. This application Jul. 23, 1979, Ser. No. 59,826

Claims priority, application Netherlands, Mar. 3, 1977, 7702262

Int. Cl.³ H01J *31/50, 40/14*

U.S. Cl. 250—213 VT **2 Claims**

1. An image intensifier tube comprising:

a housing having an entrance window with a a photocathode

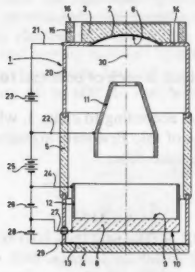
at one end thereof, and having an exit window at the other end thereof;

have an entrance face facing the photocathode,

a channel multiplier plate, mounted in the housing between the photocathode and the exit window;

an input electrode attached to the channel plate, said input electrode being cylindrically prolonged in the direction of the photocathode;

an entrance electrode on the entrance face of the channel multiplier plate, electrically connected to the input electrode;



a cylindrical intermediate electrode, mounted in the housing between the photocathode and the input electrode, said intermediate electrode having a frusto-conical portion with the narrower end nearer to the photocathode is

means to apply a given potential to said intermediate electrode; and

means to apply to said input electrode a potential lower than said given potential;

such that substantially all electrons reflected from the input electrode are intercepted by the intermediate electrode and substantially no ions can reach the photocathode from the channel plate, thereby reducing the formation of ion spots on the photocathode.

4,286,149

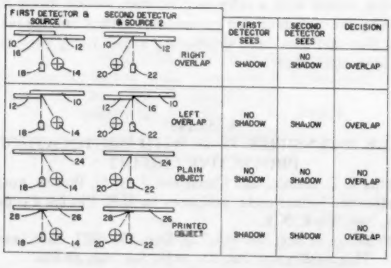
APPARATUS AND METHOD FOR DETECTION OF OVERLAPPING OBJECTS

Samuel Ben-Nathan, Waterloo; Marwin G. Neumeister, Kitchener; Mikhail Shats, Waterloo, and Robert S. McCallum, Erin, all of Canada, assignors to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Aug. 9, 1979, Ser. No. 65,383

Int. Cl.[3] G01V *9/04*

U.S. Cl. 250—223 R **25 Claims**



1. An overlapped object detector comprising:

means for transporting objects along a defined path;

a station including a plurality of detection means aligned substantially perpendicular to the direction of movement of said objects, each detection means including first and second radiation sources oriented to direct radiation obliquely against said objects as they pass said station, also including first and second radiation sensing means, and first and second lens means associated respectively with said first and second sensing means, each sensing means paired respectively with its corresponding radiation source to receive radiation therefrom which has been reflected from an object passing said station and directed to said sensing means by its associated lens means, said sensing means being able to detect a decrease in reflectivity of an object caused by the edge of one object overlapping another object, or by a mark on an object; and

logic means coupled to said detection means for signifying when an overlap has taken place, said overlap being indicated by a detection by one or the other, but not both, of the radiation sensing means of all of said detection means of a decrease in reflectivity.

4,286,150

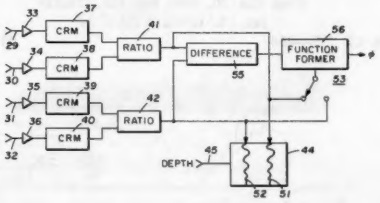
NEUTRON-NEUTRON LOGGING

Linus S. Allen, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 23, 1978, Ser. No. 954,053

Int. Cl.[3] G01V *5/00*

U.S. Cl. 250—270 **4 Claims**



1. A system for logging the formations traversed by a borehole, comprising:

(a) a borehole tool,

(b) means for moving said borehole tool through a borehole,

(c) a steady-rate source of fast neutrons located within said borehole tool for irradiating the formations surrounding the borehole with neutrons,

(d) a pair of thermal neutron detectors located within said borehole tool at spaced-apart positions from said source,

(e) a pair of gamma ray detectors located within said borehole tool at spaced-apart positions from said source,

(f) means for producing a first ratio signal representative of the ratio of the numbers of thermal neutrons measured by said thermal neutron detectors, and

(g) means for producing a second ratio signal representative of the ratio of the numbers of thermal neutron capture gamma rays measured by said gamma ray detectors.

4,286,151

DEVICE FOR GUIDING THE DISPLACEMENT OF A VEHICLE AND IN PARTICULAR AN AGRICULTURAL MACHINE

Maurice C. J. Lestradet, B.P. 10, 51230 Fere Champenoise, France

Filed Nov. 16, 1979, Ser. No. 94,811

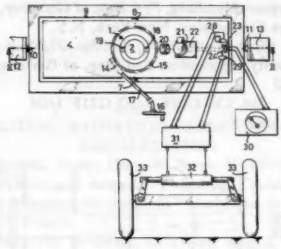
Claims priority, application France, Nov. 21, 1978, 78 32804

Int. Cl.[3] G01D *5/30*

U.S. Cl. 250—230 **10 Claims**

1. A device for guiding the displacement of a vehicle, having ground-contacting wheels, and in particular an agricultural machine, said device being more particularly adapted to enable the vehicle to effect different parallel passages over an area and comprising a support, a system for automatically maintaining

said support in a horizontal position on a fixed part of the vehicle, a magnetized element acting as a compass and movably mounted on said support, means defining at least one planar light beam reflecting face on said magnetized element, means combined with said magnetized element for angularly orienting said magnetized element, an optical system mounted on said support for locating the position of said reflecting face, an automatic piloting device comprising a system mounted on said support for detecting the intensity of the beam reflected by said reflecting face, means for steering the steering wheels of the vehicle and a servo-control device connecting said intensity detecting system to said wheel steering means, said detect-



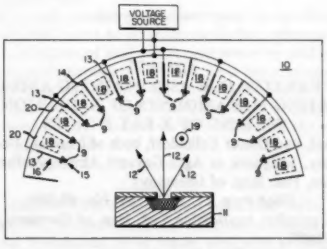
ing system detecting the magnitude and direction of the lateral deflection of the beam reflected by said reflecting face and comprising two mirrors disposed at 90° to each other and constituting a vertical dihedral structure which defines a vertical flat surface at the dihedral angle between said two mirrors and having a width which is equal to the width of the image of said reflecting face projected by said optical system, the bisector plane of said dihedral angle coinciding with the plane of the optical axis of the incident beam impinging on said reflecting face and the optical axis of the beam reflected by said reflecting face, and two luminous flux responsive means respectively disposed laterally on both sides of said two mirrors and connected to said servo-control device.

4,286,152

COLLECTION SHIELD FOR ION SEPARATION APPARATUS

Ralph A. Pugh, and Kenneth L. Ford, both of Richland, Wash., assignors to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.

Filed Nov. 29, 1979, Ser. No. 98,803
Int. Cl.³ H01J *39/34;* B01D *59/44*
U.S. Cl. 250—281 **8 Claims**



1. An apparatus for separating an isotopic mixture of the type comprising (a) source means for emitting neutral particles of said isotopic mixture, (b) a plurality of spaced apart electrode means disposed in the path of particle emission; (c) in a region between spaced apart electrodes a radiation beam for isotopically selectively ionizing at least some of said neutral particles, said beam occupying less than all of said region, and (d) means for separating said ionized particles from said neutral particles, the improvement comprising:

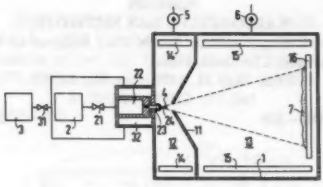
at least one collection shield removably engaged to at least one respective electrode having at least one surface projecting from said electrode for collecting those neutral particles from said source which would otherwise pass between electrodes without passing through said beam.

4,286,153

METHOD AND APPARATUS FOR THE SEPARATION OF ISOTOPE MIXTURES

Karl Janner, Erlangen; Klaus Gregorius, Neunkirchen, and Eberhard Schuster, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim, Fed. Rep. of Germany

Filed Jul. 9, 1976, Ser. No. 703,784
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1975, 2536940
Int. Cl.³ B01D *59/00*
U.S. Cl. 250—281 **6 Claims**



1. In apparatus for the separation of an isotope substance from a vaporous mixture of isotope substances involving selective excitation, dissociation or ionization of one substance by adiabatically decompressing the vaporous mixture to cool it to a temperature below 100° K. and irradiating the cooled vaporous mixture by an electromagnetic wave selectively absorbed by an isotope substance, the improvement which comprises a diffuser in which the vaporous mixture, after cooling and irradiation, flows at a velocity greater than the speed of sound and in which shock wave occurs and there is a transition from supersonic to reduced velocity flow, cooling members disposed in the path of flow of the substances, partition members to separate the flow of substances into a flow containing most of the substances which have been subjected to irradiation from substances of which most have not been subjected to irradiation and outlet means for separately discharging said two separated flows.

4,286,154

METHOD OF DETECTING A MARK BY AN ELECTRON BEAM AND AN APPARATUS THEREFOR

Tsuneo Okubo, Hachioji; Nobuo Hamamoto, Hinodemachi, and Kazuo Ichino, Hameiramachi, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,125
Claims priority, application Japan, Nov. 24, 1978, 53-144135
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—307 **14 Claims**

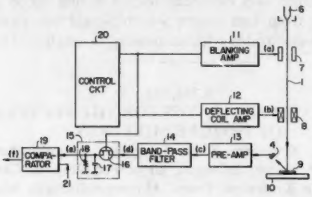
1. A method of detecting a mark on a sample by an electron beam including the steps of:

scanning the electron beam over an area of the mark provided on the sample in such a manner that the electron beam is subjected to chopping by sampling pulses having a higher frequency than the scanning frequency;

detecting the electron beam with a detector after the beam has scanned over said mark to produce a detected mark signal representative of the mark;

eliminating a component of noise from the detected mark signal;

synchronously rectifying the detected mark signal after removal of the noise component;



binary-coding the rectified detected mark signal as compared with a threshold value; and

detecting the position of the mark by using the binary-coded signal.

4,286,155

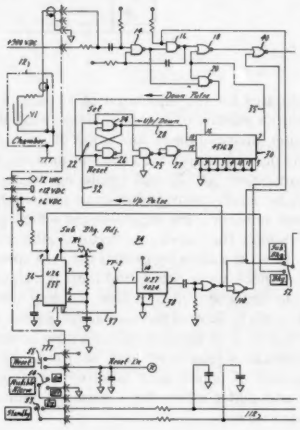
RADIOACTIVE GAS MONITOR

George R. Utting, Satellite Beach, Fla., assignor to Victoreen Incorporated, Cleveland, Ohio

Filed May 31, 1979, Ser. No. 44,195

Int. Cl.³ G01T *1/00, 1/18*

U.S. Cl. 250—336 **20 Claims**



1. A radioactive gas monitoring device for measuring the total airborne radiation activity in a designated area over an extended period of time and providing a direct readout of said measurement in predefined integrated units, including:

a detector for detecting radioactive gas and producing a first pulsed output signal at a frequency that is proportional to the concentration of said radioactive gas;

conversion means for converting said first pulsed output signal to a converted signal by dividing the frequency of said first pulsed output signal by a predetermined conversion factor so that each converted signal pulse corresponds to one of said integrated units, said conversion means including a first digital counter, a digital-to-analog converter for converting the digital output of said first digital counter to an analog signal, a comparator for comparing said analog signal to a reference signal and producing an output signal whenever the value of said analog signal is greater than the value of said reference signal, and calibration means for adjusting said predetermined conversion factor by adjusting the value of said reference signal;

accumulator means for continuously accumulating the total number of converted signal pulses produced by said conversion means over the entire extended measurement period; and

display means for displaying in said integrated units the total number of accumulated converted signal pulses.

4,286,156

DEVICE FOR DETERMINING THE SPATIAL ABSORPTION DISTRIBUTION IN A PLANE OF EXAMINATION

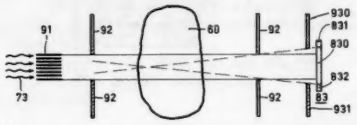
Wolfgang Wagner, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 9, 1979, Ser. No. 37,266

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821083

Int. Cl.³ G01T *1/20;* **G21F** *5/04*

U.S. Cl. 250—363 S **4 Claims**



1. In a device for determining a spatial absorption distribution in an object, comprising a plurality of radiation sources which are arranged in a plane of examination and which irradiate the plane of examination from different directions, and also comprising a large plurality of detectors which are arranged on an arc of a circle in the plane of examination and which serve to measure the intensity of radiation which passes through the object, at least some of said detectors being struck by radiation from more than one direction, the improvement wherein:

the detectors comprise a first zone **(831, 832)** which is active to produce a first signal; and

an adjoining second zone **(830)** which is disposed in the plane of examination and detects radiation which passes along straight lines between at least one source and the detectors in said second zone, and is active to produce a second signal; and

the device further comprises shielding means which function to shield the first zone from radiation which passes along straight lines between the sources and the detectors in said first zone.

4,286,157

APPARATUS FOR ASCERTAINING AND/OR REGULATING THE AMOUNTS OF RADIATION IN THE MAKING OF X-RAY IMAGES

Rolf Eickel, and Dieter Tolksdorf, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,806

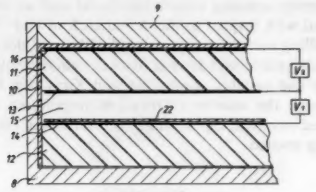
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838057

Int. Cl.³ G01T *1/22*

U.S. Cl. 250—370 **15 Claims**

1. In a dosimeter for X or gamma radiation, a pair of electrodes; a body of foamed material which is electrically nonconductive and generates charge carriers on exposure to said radiation situated intermediate and being in electrically conductive contact with said electrodes; and means for deriving from said electrodes electric current proportionate to the

amount of radiation to which said body has been exposed, including a source of electric potential having terminals of



opposite polarities respectively electrically connected to said electrodes.

4,286,158

NEUTRAL RADIATION DETECTION AND LOCALIZATION

Georges Charpak, Paris; Hoan N. Ngoc, Verrieres le Buisson, both of France, and Armando Policarpo, Coimbra, Portugal, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

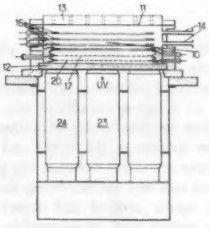
PCT No. PCT/FR 78/00046, §371 Date Aug. 2, 1979, §102(e) Date Aug. 2, 1979, PCT Pub. No. WO79/00353, PCT Pub. Date Jun. 28, 1979.

This PCT application filed Dec. 7, 1978, Ser. No. 63,138

Claims priority, application France, Dec. 7, 1977, 77 36893

Int. Cl.³ G01T *1/18;* H01J *39/29*

U.S. Cl. 250—374 **9 Claims**



1. An imaging process for detecting and localizing incident neutral radiations, comprising the steps of:

subjecting a body of gas to said radiations through collimator means under conditions which result in electron formation upon absorption of the radiations by the gas;

drifting the electrons toward a photon production space by an electric field;

subjecting said photon production space to an electric field of sufficient value to produce secondary photons by excitation of atoms of said gas in said space by said electrons;

receiving said secondary photons on a layer of wavelength shifter material located on an output window retaining said body of gas, and simultaneously determining the locations of light flashes on said layer and the energy of said light flashes.

4,286,159

DETECTOR COUPLING MECHANISM

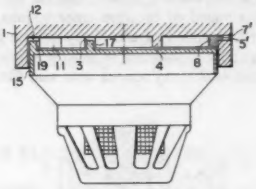
Hiroyuki Kitta, Yamato; Shinichi Aizawa, Machida, and Hiroshi Sawa, Yokohama, all of Japan, assignors to Hochiki Corporation, Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,772

Int. Cl.³ G01N *23/12*

U.S. Cl. 250—381 **12 Claims**

1. In a fire detector having a socket and a detector head with a fire detector and an electric circuit therein, and at least two different couplings on said socket associated with coupling various types of said detector heads to said socket, the improvement comprising; said socket provided with means for selectively defining an engaging portion structure for one designated detector head to be coupled to said socket and precluding coupling other detector heads and each engaging portion of said various type of detector heads having specific



structure to engage with a particular engaging portion defined by said means, whereby no detector head other than the designated detector head can be coupled to said socket plate.

4,286,160

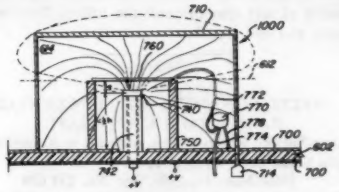
IONIZATION PARTICLE DETECTOR

Louis Ried, Jr., 1500 Eisenhower Dr., Boulder, Colo. 80301

Continuation of Ser. No. 763,011, Jan. 27, 1977, Pat. No. 4,150,373. This application Mar. 5, 1979, Ser. No. 17,638

Int. Cl.³ H01J *47/02*

U.S. Cl. 250—381 **10 Claims**



1. An ionization detector for indicating the presence of particles comprising:

a first electrode;

a second electrode, electrically independent of, and spaced from, said first electrode, said first and second electrodes defining a particle detecting space;

means, contiguous with said first electrode, for generating ions thereby producing closely concentrated, substantially equipotential, electric lines near said ion generating means and broadly spaced, substantially equipotential, electrical lines farther removed from said ion generating means, said substantially equipotential lines being shiftable due to the presence of said particles in said particle detecting space; and

means for sensing a shift in said electric equipotential lines, said sensing means being spaced from said ion generating means and located in a region where the electrical equipotential line voltage value is about 0.46 to 0.54 times the voltage differential between said first and second electrodes.

4,286,161

FILM CASSETTE DRIVE MECHANISM IN DENTAL RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS

Kazuo Hozumi, Joyo, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 14, 1980, Ser. No. 121,499

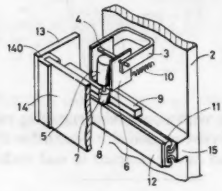
Claims priority, application Japan, Feb. 14, 1979, 54/18384[U]

Int. Cl.³ A61B *6/14*

U.S. Cl. 250—439 P **4 Claims**

1. A dental radiographic apparatus for photographing the

entire jaw providing an X-ray source and a film holder incorporating a platelike X-ray film cassette therein respectively at one end of a rotary arm and at the other end thereof in an opposed relation with each other and maintaining the same constantly in a mutually opposed relation by bringing the linear travelling speed of the film cassette into synchronism with the travelling speed of the X-ray source following the rotational movement of said arm so as to irradiate X-ray beams convergent from said X-ray source onto said film cassette in a



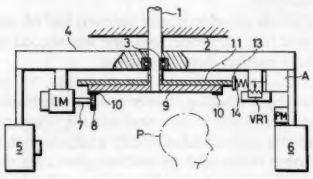
state of the beams intersecting at right angles with said cassette, characterised by a film cassette drive mechanism including said platelike film cassette fixed to said film holder, a slide bar provided in the direction of travel of said cassette, a roller in rolling contact with said slide bar, and a variable motor for driving said roller, whereby said film holder together with said film cassette are enabled to move linearly along the direction of rotation of said arm through the rolling friction between said roller and said slide bar.

4,286,162

SPEED CONTROL SYSTEM IN DENTAL RADIOGRAPHIC APPARATUS

Masakazu Suzuki, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 19, 1980, Ser. No. 131,689
Claims priority, application Japan, Mar. 23, 1979, 54/34590
Int. Cl.[3] A61B *6/14*
U.S. Cl. 250—439 P **10 Claims**



1. An X-ray film feed speed control system in a dental radiographic apparatus for photographing the entire jaws, said apparatus including an X-ray generator, a horizontal rotary arm holding an X-ray film cassette having an X-ray film therein and a rotary arm holding an X-ray film cassette having an X-ray film therein and a rotary arm drive motor for rotatingly moving said rotary arm, said generator and said motor being provided respectively at one end of said arm and at the other end thereof with an object interposed therebetween, said apparatus being designed to make a tomogram of the entire jaws of the object by actuating said arm drive motor and simultaneously feeding the X-ray film, said control system comprising:

providing a film feed motor for said X-ray film feed in a drive control circuit for the film feed motor independent of said rotary arm drive motor;

converting the number of rotations of said rotary arm drive motor into an electrical signal;

supplying the electrical signal thus converted to said X-ray film feed motor drive control circuit in the form of a drive signal;

detecting an X-ray beam irradiation position of said X-ray generator rotating around the dental arch as an electrical signal with respect to the dental arch of said object; and

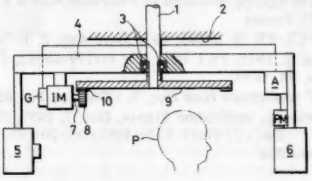
controlling said drive signal supplied by said detected electrical signal to said drive control circuit, thereby automatically and variably controlling said X-ray film feed motor through the number of rotations responding to the detected electrical signal while said horizontal rotary arm is being rotated.

4,286,163

DENTAL RADIOGRAPHIC APPARATUS FOR PHOTOGRAPHING ENTIRE JAWS

Masakazu Suzuki, Kyoto, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 19, 1980, Ser. No. 131,709
Int. Cl.[3] A61B *6/14*
U.S. Cl. 250—439 P **11 Claims**



1. A dental radiographic apparatus for photographing the entire jaws wherein the apparatus includes a horizontal rotary arm and a drive motor for rotating said horizontal rotary arm, said arm having an X-ray generator at one end thereof and having an X-ray film cassette holder for a film cassette containing an X-ray film therein at the other end thereof in such manner as to dispose an object between the generator and the cassette holder and said arm further being designed to make a tomogram of the entire jaws of said object by driving said rotary arm drive motor, said photographic apparatus being characterized in that the apparatus includes a film feed motor different from said rotary arm drive motor and adapted to feed the film in said film cassette holder, a means for converting the number of rotations of said rotary arm drive motor into an electrical signal and a film feed motor drive control circuit for variably controlling the number or rotations of said film feed motor by following and in synchronism with the number of rotations of said rotary arm drive motor.

4,286,164

METHOD FOR DETERMINING THE AVERAGE WIDTH OF LUMINESCENT STRIPES OF A VIEWING SCREEN

Frank R. Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

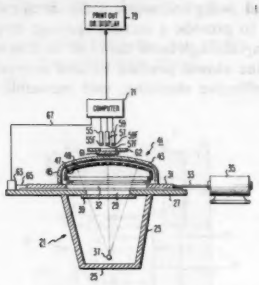
Filed Feb. 11, 1980, Ser. No. 120,472
Int. Cl.[3] G01N *21/64*
U.S. Cl. 250—461 R **10 Claims**

1. A method for determining the average width of luminescent stripes in a localized area of a luminescent viewing screen of the type comprising a plurality of parallel photoluminescent stripes, said method including

(a) scanning the widths of said stripes by a beam of ultraviolet light, whereby said stripes are excited to emit light along the path of said scan,

(b) sensing and converting to a train of electrical signals the emissions of light in an identifying spectral band emitted by selected ones of said stripes in said localized region with respect to the position of said spot in said path,

(c) and then calculating the average width of said selected ones of said stripes from the calculated distance over

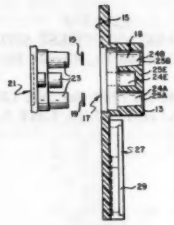


which the emissions of said signals are continuously above an assigned value.

4,286,165
DOSIMETER FOR MEASURING SKIN DOSE AND MORE DEEPLY PENETRATING RADIATION

Donald E. Jones; DeRay Parker, and Paul R. Boren, all of Idaho Falls, Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 5, 1979, Ser. No. 55,211
Int. Cl.³ H05B *33/00*; G01T *1/00*
U.S. Cl. 250—484 **12 Claims**



1. A personnel dosimeter for measuring radiation dose to a wearer within a skin layer defined between density thickness limits comprising:

a holder of thermoplastic material having a front face and a rear wall, said rear wall having an opening therein for access to a plurality of wells;

a plug adapted to seat within said rear wall opening, said plug having a plurality of posts each of which corresponding to one of said plurality of wells to define a plurality of compartments for containing TLD phosphors behind windows of predetermined density thicknesses from the front face of said holder;

a first window, within said front face at a first compartment, having a density thickness of at least about that of the lesser limit of said skin layer but no more than about the deeper limit of said skin layer;

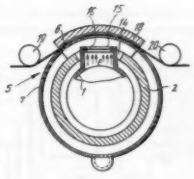
a second window, within said front face at a second compartment, having a density thickness substantially greater than that of said first window and that of the deeper limit of said skin layer, said second window density thickness is greater than that of said first window by at least 5% but no more than 100% of the average density thickness of the phosphors contained within said first and second compartments;

a third window, within said front face at a third compartment, having a density thickness of more than that of said second window and more than that of the average density thickness of the phosphors within said first and second compartments to permit estimation of the dose of penetrating radiation into the body of the wearer and thereby determine the ratio of the net dose passing through said first and said second windows being absorbed within the thickness of phosphors within said first and second compartments whereby radiation dose to said defined skin layer can be determined as a function of said ratio of net dose.

4,286,166
DEVICE FOR ELECTRON IRRADIATION OF ROLLED MATERIALS

Vasily A. Glukhikh, Belgradskaya ulitsa, 10, korpus 1, kv. 5; Mikhail P. Sviniin, ulitsa Bogaichuka, 4, kv. 25; Mikhail T. Fedotov, ulitsa Polevaya, 22, kv. 58, all of Leningrad; Vladimir P. Shirokov, ulitsa B. Dekabrskaya, 1, kv. 21; Konstantin D. Pismannik, ulitsa Butlerova, 4, korpus 3, kv. 120, both of Moscow; Alexandr I. Schegolev, ulitsa Pochtovaya, 5, kv. 17, Ivanovo, all of U.S.S.R.; Adolf Heger, Zamenhofstrasse, 9, wohnung 404, Drezden, German Democratic Rep.; Rudolf Hanke, Rufsenbergstrasse, 7, Drezden, German Democratic Rep., and Helmar Pässler, Am. Angerstrasse, 2, Drezden, German Democratic Rep.

Filed Sep. 7, 1979, Ser. No. 73,376
Claims priority, application U.S.S.R., Sep. 7, 1978, 2663351
Int. Cl.³ H01J *37/30*; H01T *19/04*
U.S. Cl. 250—492 B **4 Claims**



1. A device for electron irradiation of rolled materials, comprising:

an electron source;

a radiation protection chamber in which said electron source is positioned, electrons emitted from said electron source passing through a slot in said radiation protection chamber;

a rotatable drum in which said radiation protection chamber is positioned, said drum transporting said rolled materials into a zone of electron irradiation, and an outer surface of said drum having at least one opening through which electrons may pass to strike said rolled materials;

a housing mounted on an external surface of said drum to define said zone of electron irradiation between an end wall of said radiation protection chamber and an internal surface of said housing; and

rollers positioned on both sides of said zone of irradiation and pressing said rolled material against said drum for free entry to and exit from said zone of irradiation.

4,286,167
MULTI-ELEMENT X-RAY EQUALIZING FILTER

Philip D. La Riviere, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

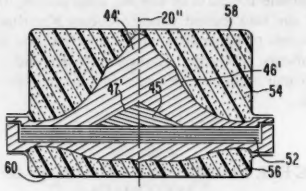
Filed May 14, 1979, Ser. No. 39,221
Int. Cl.³ G21K *3/00*
U.S. Cl. 250—510 **14 Claims**

1. A filter for a high-voltage X-ray beam comprising:

a first filter element made of a material having a relatively low effective atomic number and

a second filter element made of a material having a relatively high atomic number,

said elements being so shaped and positioned with respect to



said beam that said filter elements absorb energy in a direction-dependent manner so as to make both the intensity and the photon energy distribution substantially uniform over a useful irradiated field.

4,286,168

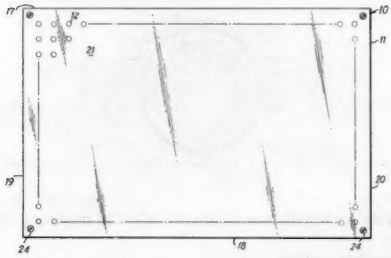
PHANTOM SIMULATION DEVICE FOR SCINTILLATION CAMERAS

James R. Carr, Silver Spring, Md., assignor to Atomic Products Corp., New York, N.Y.

Filed Jan. 18, 1979, Ser. No. 4,337

Int. Cl.[2] G21K *3/00;* **G01D** *18/00;* **G09B** *23/28*

U.S. Cl. 250—510 **3 Claims**



1. A phantom simulation device for gamma ray imaging cameras comprising: a generally planar base element which is substantially transparent to gamma ray penetration, and a plurality of metallic spheres supported by said base element in predetermined pattern; said base element including a pair of juxtaposed synthetic resinous sheets, said spheres being mounted within bores in the plane of one of said sheets.

4,286,169

SCREENING DEVICE FOR A GENERATOR PRODUCING RADIO-ISOTOPES

Hendrik V. Rossem, Sint Maartensbrug, Netherlands, assignor to Byk-Mallinckrodt CIL B.V., Netherlands

Filed Oct. 22, 1979, Ser. No. 86,795

Claims priority, application Netherlands, Oct. 20, 1978, 7810503

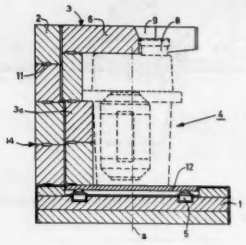
Int. Cl.[3] G21C *11/00;* **G21F** *1/00*

U.S. Cl. 250—515 **6 Claims**

1. A shielding apparatus for a radioisotope producing generator where radioisotope containing solution is produced, comprising:

(a) a stationary portion comprising a first base and a first wall extending from said first base, said first wall being of substantially semi-cylindrical cross section to provide a first opening;

(b) a moveable portion, moveable between a closed position and an open position, said moveable portion comprising a second base moveably mounted on said first base, a top and a second wall extending between the second base and said top; said second wall being concentric with said first wall and being of substantially semi-cylindrical cross section to provide a second opening; one of said walls extending through more than 180° so that said walls overlap in the closed position of said moveable portion to insure effective shielding; said moveable portion in its



open position having said second opening aligned with said first opening to provide a passage of sufficient size for movement of the generator therethrough;

(c) said moveable portion and said stationary portion being comprised of material preventing penetration of radiation from the generator;

(d) said stationary portion and said moveable portion each including segments placed vertically one on top of the other.

4,286,170

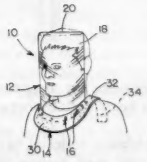
X-RAY FACE MASK AND CHEST SHIELD DEVICE

Samuel Moti, 280 Mirabeau Pl., Grosse Pointe Farms, Mich. 48234

Filed Feb. 11, 1980, Ser. No. 120,687

Int. Cl.[3] H01J *35/16;* **G21F** *3/02*

U.S. Cl. 250—520 **20 Claims**



1. An improved device for shielding and protecting a person against secondary or scatter radiation to the face, head and neck, and to be worn on the shoulders of such person, wherein the improvement comprises

a face mask of a relatively clear substantially transparent lead containing radiation shielding material and having

a facing side and lateral rearwardly extending portions covering the front and at least a portion of the sides of the wearer's face, head and neck, said face mask having upper and lower margins,

a chest shield of a lead-containing rubber or plastic sheet radiation shielding material having

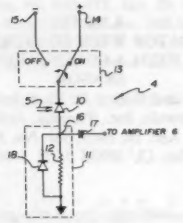
a medial web portion to lie upon the wearer's chest closely adjacent and below said face mask, and distal shoulder strap portions extending from the ends of said web portion to lie upon the wearer's shoulders,

and means securing said chest shield to said face mask to form a unitary radiation shielding device.

4,286,171
OPTOELECTRIC CROSS-POINT SWITCH

Elmer H. Hara, and R. Ian MacDonald, both of Ottawa, Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Mar. 5, 1979, Ser. No. 17,722
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **8 Claims**

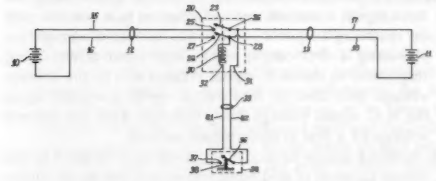


1. An optoelectronic switch comprising:
a photosensing diode for converting an optic signal to an electronic signal; and
bias means connected to the photosensing diode for selectively reverse biasing the photosensing diode to render the photosensing diode responsive to an optical signal or forward biasing the photosensing diode for rendering the photosensing diode substantially nonresponsive to an optical signal.

4,286,172
SAFETY JUMPER CABLES

Anthony B. Millonzi, 1427 Jackson, River Forest, Ill. 60305, and Joseph C. Millonzi, 4948 N. Neva, Chicago, Ill. 60656

Filed Oct. 9, 1979, Ser. No. 82,915
Int. Cl.³ H02J *7/34*; H02G *11/00*
U.S. Cl. 307—10 R **1 Claim**

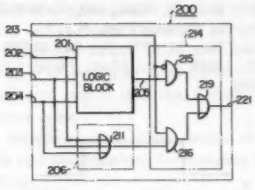


1. In a jumper cable for use in connecting a relatively weak twelve volt battery in a first automotive vehicle with a relatively strong twelve volt battery in a second automotive vehicle and comprising elongated wire means having clips at each end for engaging the battery terminals of the respective batteries, the improvement comprising:
a relay comprising normally open contact means for completing an electrical circuit when closed and a solenoid having two connections, said contact means comprising a pair of normally open switches, said solenoid being effective when energized by twelve volt direct current to cause said contact means to close;
said wire means comprising a first pair of wires having two ends and with clips at one of said ends for connection to the battery of the first vehicle and a second pair of wires having two ends and with clips at one of said ends thereof for connection to the battery of the second vehicle, the other ends of said wires being connected to said contact means so that when said contact means is closed an electrical circuit is completed between the two batteries through said wires, a first wire of each pair of wires being connected to one of the switches and a second wire of each pair of wires being connected to the other of the switches, the other end of one of the second pair of wires being connected to one of the solenoid connections, each pair of wires being approximately of equal length whereby the relay will be located intermediate the vehicles;
a normally open, momentary contact switch having two connections and being of a size suited for holding in a person's hand; and
a two wire cable comprising a first wire connecting the other of the solenoid connections with one of the momentary contact switch connections, and a second wire of said cable connecting the other of the momentary contact switch connections with the other end of the other wire of the second pair of wires;
whereby while said clips are being connected to the batteries and said relay solenoid is de-energized an electrical circuit between the batteries will not be completed, and after said clips are all connected to the batteries said solenoid can be energized by closing said momentary contact switch with any spark that then occurs being at the relay or the momentary contact switch and thus remote from the batteries.

4,286,173
LOGICAL CIRCUIT HAVING BYPASS CIRCUIT

Yuichi Oka, and Yosimitsu Takiguchi, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 22, 1979, Ser. No. 22,949
Claims priority, application Japan, Mar. 27, 1978, 53-34199; Jul. 14, 1978, 53-85101
Int. Cl.³ H03K *19/00, 17/00, 13/32*
U.S. Cl. 307—440 **15 Claims**



1. A logical circuit comprising:
circuit means for performing logical functions including input means for receiving input signals;
selection means coupled to said circuit means for selecting input signals applied thereto in response to selection signals; and
transmission means for transmitting signals from said input means to said selection means including gate means coupling said input means to said selection means.

4,286,174
TRANSITION DETECTOR CIRCUIT

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

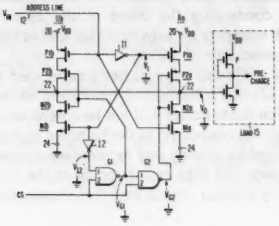
Filed Oct. 1, 1979, Ser. No. 80,702
Int. Cl.³ H03K *17/60*
U.S. Cl. 307—242 **8 Claims**

1. The combination comprising:
an input terminal adapted to receive input signals having a first or a second value;
a first point of operating potential;
an output point;
first and second signal paths connected in parallel between said first point and said output point; each path including first and second switching means and each path providing a relatively low impedance path between said first and output points when its two switching means are enabled; and

means coupled between said input terminal and said first and second switching means of said first and second signal paths responsive to the signal at said input terminal for:

(a) enabling said first switching means of said first path and disabling said first switching means of said second path for one value of input signal and disabling said first switching means of said first signal path and enabling said first switching means of said second signal path for the other value of input signal; and

(b) disabling the second switching means of each signal path a first time delay after the first switching means of that path is enabled, and enabling the second switching means of each signal path a second time delay after the first switching means of that path is disabled.

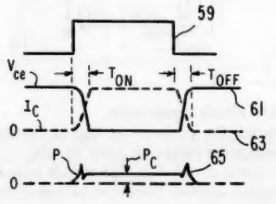


4,286,175

VMOS/BIPOLAR DUAL-TRIGGERED SWITCH

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 21, 1979, Ser. No. 40,989
Int. Cl.[3] H03K *17/04, 17/06, 17/60, 17/687*
U.S. Cl. 307—581 **37 Claims**



1. A switching circuit, comprising:

a power terminal for receiving a first operating voltage;

bipolar switching transistor means having a collector electrode connected to said power terminal, an emitter electrode for receiving a source of reference potential, and a base electrode for receiving a control current;

a first terminal for receiving a first control signal;

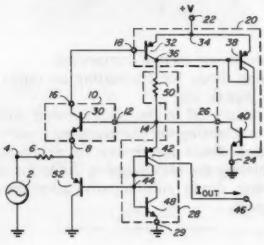
programmable current supply means connected between said first terminal and the base electrode of said bipolar switching transistor means responsive to said first control signal having a first level of voltage, sequentially (1) initially supplying current of sufficient magnitude to said base electrode and turning on said transistor means at least into an unsaturated conduction state, (2) a predetermined time thereafter increasing the magnitude of current being supplied to said base electrode to further drive said transistor toward saturation, depending upon the characteristics of a load being driven by said circuit, for minimizing the power dissipation of said transistor means thereafter said current supply means is responsive to said first control signal having a second level of voltage for (3) reducing the magnitude of current being supplied to said base electrode a sufficient amount for ensuring said transistor means is placed into an unsaturated conduction state, and (4) a predetermined time thereafter further reducing the magnitude of current being supplied to said base electrode to substantially zero, for turning off said transistor.

4,286,176

COMPARATOR WITH HYSTERESIS FOR INTERFACING WITH A GROUND-REFERENCED A.C. SENSOR

Robert B. Jarrett, and Wilson D. Pace, both of Tempe, Ariz., assignors to Motorola, Inc., Phoenix, Ariz.

Filed Apr. 16, 1979, Ser. No. 30,672
Int. Cl.[3] H03K *5/08, 5/00*
U.S. Cl. 307—261 **8 Claims**



1. A circuit suitable for detecting transitions of an A.C. signal having a voltage which oscillates about a reference potential, the circuit providing hysteresis-type switching action and providing a symmetrical output waveform, the circuit comprising:

(a) input means including an input terminal for receiving the A.C. signal, a control terminal coupled to a control node for receiving a control voltage, and an output terminal for providing a first output signal, said input means being responsive to the A.C. signal voltage and to the control voltage such that the first output signal is enabled upon the A.C. signal voltage being different from the control voltage by a first predetermined amount;

(b) feedback means having an input terminal coupled to the output terminal of said input means and having an output terminal coupled to the control node, said feedback means being responsive to the first output signal for switching the output terminal of said feedback means between a first state and a second state, the first state being effective to render the conrol voltage at the control node substantially equal to the reference potential;

(c) bias means coupled to the control node for establishing the control voltage at the control node at a bias voltage whenever the output terminal of said feedback means is in the second state, the bias voltage being different from the reference potential by substantially twice the first predetermined amount;

(d) clamping means coupled between the input terminal of said input means and a source of the reference potential for restricting the voltage of the A.C. signal from being different from the reference potential in excess of a second predetermined amount; and

(e) circuit output means electrically coupled to said control node and having a symmetrical output signal thereon having a first level when said output terminal of said feedback means is in said first state and having a second level when said output terminal of said feedback means is in said second state.

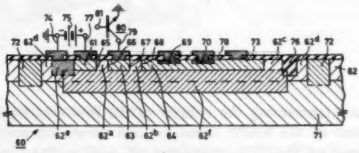
4,286,177

INTEGRATED INJECTION LOGIC CIRCUITS

Cornelis M. Hart, and Arie Slob, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 674,065, Apr. 5, 1976, abandoned, which is a continuation of Ser. No. 505,663, Sep. 13, 1974, abandoned, which is a continuation of Ser. No. 253,348, May 15, 1972, abandoned, Ser. No. 653,131, Jan. 28, 1976, Pat. No. 4,056,810, and Ser. No. 653,472, Jan. 29, 1976, Pat. No. 4,078,208, each is a division of Ser. No. 505,663, Sep. 13, 1974, abandoned. This application Feb. 9, 1978, Ser. No. 876,219
Claims priority, application Netherlands, May 22, 1971, 7107040

Int. Cl.[3] H01L *27/02;* H03K *19/091*
U.S. Cl. 307—296 R 47 Claims



1. A monolithic integrated circuit comprising:

a common semiconductor body provided with a plurality of bipolar transistors adjacent a major surface thereof and each including outer zones and a first type conductivity surface medial active zone making rectifying contact with said outer zones and forming at least three successive active zones through which current can be caused to flow when appropriately biased,

biasing means to cause current flow through the transistors, said biasing means including at least one first type conductivity current injecting elongated surface zone with at least one elongated edge separate from the transistor active zones, said biasing means also including an adjacent zone forming a rectifying junction with said current injecting zone, said current injecting zone being spaced laterally from medial active zones of plural transistors by a common separating intermediate body surface region of second opposite-type conductivity, and means for forward biasing said rectifying junction so as to cause the injection of carriers into said adjacent zone and the collection of carriers by the medial active zones of said plural transistors and via vertical facing sides thereof, thereby tending to cause a rectifying junction between the medial active zones and an adjacent active zone of said transistors to become forward biased tending to produce current flow through said transistors' active zones,

means for reducing carrier injection by the said medial active zones back into the separating region thereby to increase the current amplification factor of said transistors, said carrier injection reducing means comprising at least one generally comb-like surface zone of second type conductivity forming part of the separating region and having a second-type-forming dopant concentration higher than that of an adjoining portion of the separating region and also higher than the first-type-forming dopant concentration of the said medial active zones and extending along the medial active zone sides remote from the current injecting zone and also between the medial active zones toward the current injecting zone edge and located nearer to the said edge than are the medial zones from the said edge,

and means interconnecting said transitors for initiating or utilizing their current flow.

7. A monolithic integrated circuit comprising:

a common semiconductor body provided with a plurality of semiconductor circuit elements including bipolar transistors adjacent a major surface thereof and each bipolar transistor including outer active zones and a first type conductivity medial active zone forming at least three successive active zones through which current can be caused to flow when appropriately biased,

biasing means to cause current flow through the transistors, said biasing means including at least one current injecting zone separate from the transistor active zones and also including an adjacent zone of second type conductivity opposite said first type conductivity forming a rectifying junction with said current injecting zone, said current injecting zone being spaced from a medial active zone of at least one of the transistors by a separating intermediate body region of second opposite-type conductivity, and means for forward biasing said rectifying junction causing the injection of charge carriers into said adjacent zone and the collection of charge carriers from said separating region by a side of said medial active zone facing said adjacent zone, thereby tending to cause a rectifying junction between the carrier-collecting medial active zone and an adjacent active zone of said one transistor to become forward biased tending to produce current flow through said one transistor's active zones,

said medial active zone of said one transistor having at least one side other than said facing side and which extends transverse to said major surface,

means for reducing carrier injection by the said medial active zone back into the separating region thereby to increase the current amplification factor of said one transistor, said carrier injection reducing means comprising means substantially completely circumscribing all sides of said medial active zone, exclusive of said facing side, which are transverse to said major surface and including a surface region of insulating material inset into the body surface adjacent said at least one transverse side of the medial active zone,

and means interconnecting other circuit elements of the body with said one transistor for initiating or utilizing its current flow.

44. A monolithic integrated circuit comprising:

a common semiconductor body provided with a plurality of circuit elements adjacent a major surface thereof and each including a first surface zone of first conductivity type and a second surface zone making rectifying contact therewith, said first and second surface zones forming a region through which current can be caused to flow when appropriately biased,

biasing means to cause current flow through said regions, said biasing means including at least one first conductivity type current injecting surface zone separate from the first and second zones and nested in and forming a rectifying junction with an adjacent second conductivity type surface zone, said adjacent second conductivity type surface zone extending from said major surface into a first surface zone of at least one of said circuit elements and having a higher dopant concentration than said first surface zone,

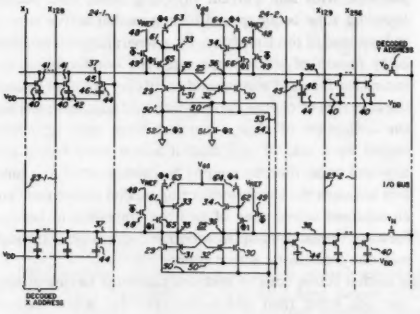
means for connecting said one current injecting surface zone and said adjacent surface zone continuously to a source of biasing potential so as to forward bias continuously the rectifying junction therebetween causing the injection of charge carriers into said adjacent surface zone and causing collection of charge carriers by said first surface zone, thereby tending to produce current flow through the region of said one circuit element,

and means interconnecting other circuit elements of the body with said one circuit element for initiating or utilizing its current flow.

4,286,178
SENSE AMPLIFIER WITH DUAL PARALLEL DRIVER TRANSISTORS IN MOS RANDOM ACCESS MEMORY

G. R. Mohan Rao, and Lionel S. White, Jr., both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 12, 1978, Ser. No. 914,646
Int. Cl.[3] H03K 5/24, 3/353; G11C 7/06
U.S. Cl. 307—355 11 Claims



1. A memory system of the type having an array of rows and columns of memory cells and a plurality of sense amplifiers, the sense amplifiers having inputs connected to each column, each sense amplifier comprising first and second pairs of cross-coupled driver transistors with each of such transistors having a source-to-drain path and a gate, each of the first pair of driver transistors having one end of its source-to-drain path directly cross connected to the gates of the other of said first and second pairs, each of the second pair of driver transistors having one end of its source-to-drain path directly cross connected to the gates of the other of said first and second pairs, the gates of the opposing transistors of the first and second pairs having the same voltages thereon throughout an operating cycle of the memory system, said one ends of the source-to-drain paths of both said first and second pairs being coupled together and to said columns whereby the source-to-drain paths of the first pair of driver transistors are in parallel with the source-to-drain paths of the second pair of driver transistors, means separately connecting the other ends of said source-to-drain paths of each of the first and second pairs of driver transistors to reference potential to render the first pair conductive prior to a selected time in an operating cycle and both the first and second pair conductive after said selected time in an operating cycle.

4,286,179
PUSH PULL SWITCH UTILIZING TWO CURRENT SWITCH CIRCUITS

Richard R. Konian, Poughkeepsie, and James L. Walsh, Hyde Park, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1978, Ser. No. 955,551
Int. Cl.[3] H03K 19/086
U.S. Cl. 307—455 5 Claims

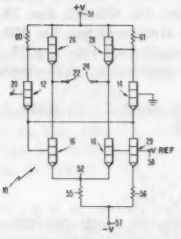
1. A high speed current switch logic circuit comprising:

first and second transistors having common emitter connections connected by a circuit means to a negative voltage source and means connecting both collectors to a positive voltage source;

said circuit means including a third transistor connected between the emitter connection of said first and second transistors and said negative voltage source, said third transistor having its base connected to a voltage reference,

an input connected to the base of the first transistor and means referencing the base of the second transistor whereby said first and second transistors are operated in a current switching mode;

means for connecting the emitters of fourth and fifth transistors to said negative voltage source and means connecting the collectors to said positive voltage source and to opposite sides of a load; and

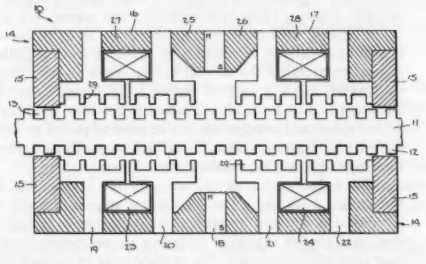


means connecting the emitter of the first transistor to the base of the fourth transistor and means connecting the base of the fifth transistor to said voltage reference whereby current switching operation of the first and second transistors causes current switching operation of the fourth and fifth transistors, as well as push pull switching of power through said load.

4,286,180
VARIABLE RELUCTANCE STEPPER MOTOR

Lawrence W. Langley, Christiansburg, Va., assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jul. 20, 1978, Ser. No. 926,311
Int. Cl.[3] H02K 37/00
U.S. Cl. 310—12 16 Claims



1. A variable reluctance, bi-directional stepper motor comprising:

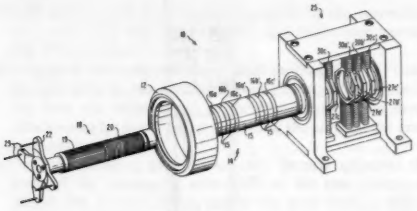
a first member having a plurality of teeth, each of said teeth having both a pitch P and a width equal to P/2; and

a second member moveable relative to said first member, said second member comprising two poles, each pole having two sets of teeth, each of said teeth having both a pitch P and a width equal to P/4, the sets of teeth in each pole being offset from each other by an amount equal to $(n\pm\frac{1}{4})P$, n being an integer, said poles being offset from each other by an amount equal to $(m\pm\frac{1}{4})P$, m being an integer, each of said poles having associated therewith a winding adapted for connection to a direct current source, said second member having associated therewith at least one magnet.

4,286,181
STEPPING MOTOR FOR ROTARY DEVICE

Adolfo M. Guzman, and Howard E. Van Winkle, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 12, 1979, Ser. No. 56,770
Int. Cl.[3] H02K *37/00*
U.S. Cl. 310—49 R 8 Claims

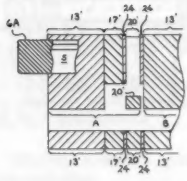


1. A stepping motor comprising:
a frame;
an axially elongated armature having a plurality of spaced elongated magnetic flux-concentrating ridges extending in a predetermined direction;
a movably mounted ring assembly on the frame and positioned co-axially adjacent to said armature, but radially spaced therefrom, said ring assembly including a plurality of elongated ring members of magnetic material separated by spacers of non-magnetic material, the ring members being adjacent and facing said elongated ridges on said armature for magnetic interaction therewith,
a coil carrier of magnetic material fixedly mounted on said frame adjacent to but radially spaced from and axially aligned with each ring members respectively, and
an electrical coil mounted on each coil carrier;
whereby magnetic armature step-inducing flux may be supplied via a predetermined coil carrier by conducting current through the coil on the coil carrier thereby supplying a magnetic flux in the respective adjacent ring member, and, in turn, aligning the respective ring members and predetermined ones of said ridges on said armature.

4,286,182
LAMINATED ROTOR FOR A DYNAMOELECTRIC MACHINE AND METHOD OF MAKING SAME

Henry G. Lenz, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 16, 1979, Ser. No. 95,024
Int. Cl.[3] H01K *1/32*
U.S. Cl. 310—61 11 Claims

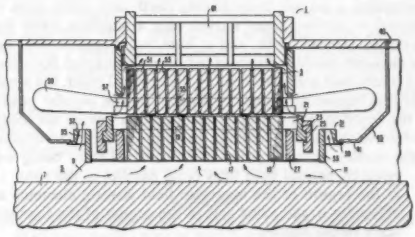


1. A laminated rotor for a dynamoelectric machine having cast axial conductors, and radial ventilating ducts that extend between said conductors at axially spaced points along the conductors, comprising:
a. a plurality of main rotor laminae each having arcuately spaced conductor slots and arcuately spaced coolant passageways, said coolant passageways being positioned radially inward from said conductor slots,
b. a plurality of vent laminae each having arcuately spaced conductor slots and arcuately spaced vent apertures, said vent apertures each having a greater radial length than the radial length of said coolant passageways in the main conductor laminae and each vent aperture being positioned radially inward from said conductor slots,
c. a plurality of duct laminae each having arcuately spaced conductor slots, coolant passageways and coolant duct slots, each of said coolant duct slots being positioned between a respective pair of conductor slots,
d. a plurality of transition laminae each having arcuately spaced conductor slots and arcuately spaced vent apertures, said vent apertures being positioned radially inward from said conductor slots,
e. all of said laminae being stacked to form a laminated rotor having a plurality of sets of laminations, at least one of said transition laminae being positioned in the stack between each of said sets, each of said sets comprising a group of said main rotor laminae stacked next to a group of said vent laminae and at least one transition laminae stacked between said group of vent laminae and a group of duct laminae.
f. the longitudinal axes of the conductor slots in all of said laminae being in substantial alignment, and all of said coolant passageways being generally aligned and in overlapping relationship with the vent apertures in said vent laminae and the transition laminae, and
g. a plurality of cast conductors positioned, respectively, in each of said conductor slots.

4,286,183
DYNAMOELECTRIC MACHINE

Lon W. Montgomery, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 17, 1977, Ser. No. 778,528
Int. Cl.[3] H02K *9/00*
U.S. Cl. 310—62 4 Claims



1. A dynamoelectric machine having
a stator;
a rotor;
a shaft rotatably mounted within the stator and forming a core for the rotor;
a spider extending radially outwardly from the shaft;
a plurality of rotor laminations encircling the spider, the rotor laminations being arranged in groups with a space between groups and the rotor laminations having a plurality of notches adjacent their outer periphery, the notches being aligned to form axial grooves;
rotor bars disposed in the axial grooves in the rotor laminations;
short circuiting rings disposed on the ends of the rotor bars for electrically connecting the ends thereof;
fan assemblies, one on each end of the shaft disposed outboard and adjacent the short circuiting rings, the fan assemblies being made of austenitic stainless steel;
a plurality of stator laminations disposed to encircle the

rotor, the stator laminations being disposed in groups with a space between groups, the stator laminations having an inner margin with a plurality of aligned notches disposed adjacent thereto to form axial grooves in the stator laminations; and

conductive windings disposed in the axial grooves in the stator laminations, the windings having turns which are formed, as the windings, leave one axial groove in the stator and return to another such groove, the end turns extending axially and outwardly beyond the short circuiting rings and the fan assemblies;

whereby when operating the isopotential lines normal to the magnetic field in the end region of the machine are more evenly distributed resulting in lower losses and reduced temperature differentials in the short circuiting rings.

4,286,184

ELECTRONIC MOTOR HAVING A MULTI-POLE EXTERNAL ROTOR

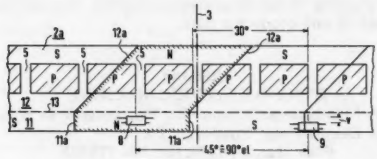
Georg Kögler; Hans Kühnlein, and Karl Schalk, all of Nuremberg, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich & Berlin, Fed. Rep. of Germany

Filed Nov. 6, 1979, Ser. No. 91,831

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1978, 2850478

Int. Cl.³ H02K *11/00*

U.S. Cl. 310—67 R **3 Claims**



1. In an electronic motor having a multipole external rotor comprising a magnet body having north and south poles and adapted to revolve about a rotor axis, a multislot stator fixed inside the external rotor, and at least two magnetic field sensing elements radially disposed between the magnet body and a flux return part and fixed near by the external rotor, the sensing elements furnishing signals dependent on the angular position of the rotor to an electronic commutation device for feeding current to the stator windings, the improvement comprising:

the north and south poles of the external rotor being separated by neutral field lines lying parallel to the rotor axis in the region of the magnetic field sensing elements and obliquely to the rotor axis in the region of the laminated stack of the stator.

4,286,185

OIL DRYING SYSTEM FOR MOTORS

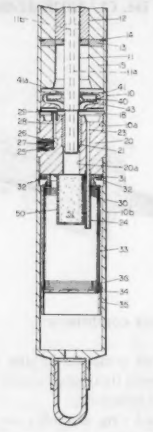
John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Filed Jun. 21, 1979, Ser. No. 50,916

Int. Cl.³ H02K *5/10*

U.S. Cl. 310—87 **2 Claims**

1. In a submersible oil well pump having an electric motor housing insertable into the bottom of a well casing and containing a hollow rotatable shaft projecting out of the housing through a fluid seal and bearings for supporting the shaft in the housing, a closed lubricating system for the bearings in the motor housing, comprising: a lubricating oil reservoir formed in said housing and having an oulet communicating with the hollow bore in the motor shaft; a plurality of radial passages formed in the shaft communicating between the motor bearings and the shaft bore; pump means mounted on the shaft said pump means having an inlet constructed and arranged to receive spent lubricating oil flowing out of the bearings; conduit means connecting the pressured fluid outlet of said pump means with the interior of said lubricating oil reservoir; and hygroscopic filter means disposed in said reservoir and connected in the flow path of the pressurized lubricating oil toward the bearings, whereby water is removed from the



circulating oil, said oil reservoir, pump means and all fluid passages and conduit means being initially filled with lubricating oil, and said reservoir having an expandable wall to provide increased volume for fluid leaking through the fluid seal into said reservoir.

4,286,186

VEHICULAR ALTERNATOR END SHIELD CONSTRUCTION

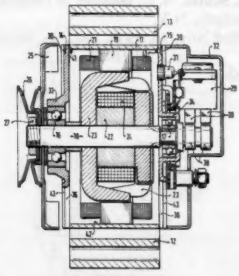
Walter Hagenlocher, Stuttgart; Heinz Hesse, Gerlingen; Karl Kleebaur, Allmersbach; Christoph Kugel, and Rüdiger Sohnle, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 85,116

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845665

Int. Cl.³ H02K *5/00*

U.S. Cl. 310—89 **7 Claims**



1. Vehicular alternator construction, particularly for automotive vehicles comprising

a tubular housing (**11**);

a stator (**19, 21**) secured in the housing;

the rotor (**22, 23, 24**) having a rotor shaft (**18**);

bearings (**16, 17**) journalling the rotor;

the end covers (**14, 15**) secured at respective ends of the

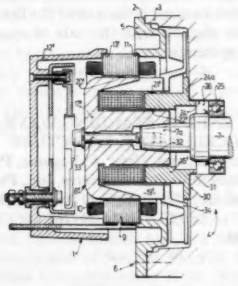
housing and retaining said bearings, extending transversely to the axis of rotation of the shaft;
at least one of the end covers being a star-shaped sheet metal structure having three arms (35) extending radially symmetrically outwardly from the axis of rotation of the shaft;
the area (36) between the arms being large with respect to the area covered by the arms (35) themselves to provide a large air ingress opening for ventilating air for the machine;
a bushing-like structure formed centrally in the respective end cover (14, 15) within which the respective bearing (16, 17) is seated;
the edges of the arms and the central bushing (33, 34) being formed with an essentially right-angle projection extending from the major plane of the star-shaped sheet metal structure to form stiffening ribs along the sides of the arms and said bushing;
inwardly extending projections (41) formed adjacent the ends of the respective arms (35) of the end covers or shields (14, 15) and fitting atainst the inner surface (42) of the housing shell (11) for the accurate positioning of the respective end cover or shield with respect to the shell (11);
and attachment openings (37) positioned close to the ends of the respective arms (35) to permit attaching the respective end cover or shield to the housing shell (11).

4,286,187

BEARINGLESS GENERATOR AND ROTARY MACHINE COMBINATION

Georg Binder, Bechhofen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 20, 1979, Ser. No. 22,283
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816180
Int. Cl.³ H02K *5/00*
U.S. Cl. 310—91 **5 Claims**



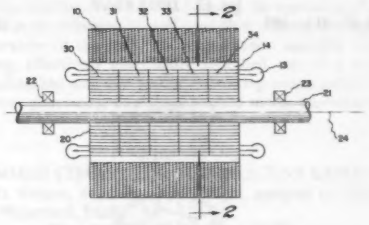
1. The combination of a remote machine (4) comprising
a housing;
a rotary machine shaft (7);
a rotary seating surface coaxial with said shaft formed on a surface portion thereof;
and a stationary seating surface (3) formed on the housing, concentrically positioned with respect to the axis of the machine shaft (7),
with
a bearingless, remotely journaled generator comprising stationary parts including
a frame (5);
a stationary engagement surface (2) formed on the frame adapted to fit against the stationary seating surface on the housing in positioned alignment;
an armature structure (9, 10) and a field structure (16');
and rotary parts including
a rotor (8, 17', 19');
a rotary engagement surface formed on a rotary surface portion of the rotor adapted to interfit with the rotary seating surface on the machine shaft (7) and attaching means (33) securing said surfaces in positioned alignment,
and wherein the interfitting engagement surfaces (2) of the stationary parts (5, 9, 16', 31) of the generator and the interfitting engagement surfaces (32) of the rotary parts (8') of the generator are all located at the side of the generator adjacent the housing and the shaft, respectively, of the remote machine (4),
the rotary parts of the generator being secured to and solely supported by the machine shaft (7).

4,286,188

AMORPHOUS METAL HYSTERESIS MOTOR

Vernon B. Honsinger, Ballston Lake, and Russell E. Tompkins, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,445
Int. Cl.³ H02K *15/02, 15/10, 17/00*
U.S. Cl. 310—162 **6 Claims**



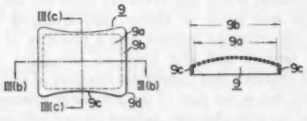
1. A hysteresis machine comprising: a stator structure having a central opening and having a central axis and stator winding means for producing a rotating magnetic field which rotates about said central axis; and a rotor structure positioned within said central opening in said stator structure and within said rotating magnetic field and being rotatable relative to said stator structure about said central axis, said rotor structure comprising a plurality of adjacent coils of amorphous metal tape wound substantially concentrically about said axis so as to collectively define a rotating magnetic body having the hysteretic properties of a hysteresis machine rotor, each coil comprised of a plurality of turns of tape and each tape having its flat sides parallel to the rotor axis.

4,286,189

COLOR CATHODE RAY TUBE WITH SHADOW MASK HAVING INWARDLY BENT SKIRT PORTIONS

Sachio Koizumi, and Akio Yamaguchi, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 911,394, Jun. 1, 1978, abandoned. This application Feb. 20, 1980, Ser. No. 122,993
Claims priority, application Japan, Nov. 4, 1977, 52-131554
Int. Cl.³ H01J *29/07*
U.S. Cl. 313—402 **5 Claims**



1. A shadow mask type color cathode ray tube comprising:
an electron gun;
a fluorescent plane provided on an inner surface of a face plate of said cathode ray tube, said fluorescent plane forming a screen; and

an apertured shadow mask for defining points of bombardment of an electron beam on said fluorescent plane, said shadow mask being provided with a skirt portion at its periphery to give a mechanical strength to said shadow mask, wherein said shadow mask has an effective area having a predetermined radius of curvature and being convexly curved toward said fluorescent plane;

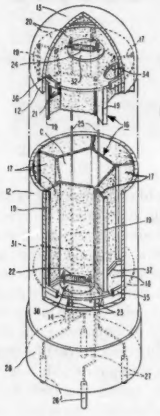
a pair of opposing sides of said skirt portion being bent in a direction toward an axis extending between the center of the effective area of said shadow mask and the electron gun with the radius of curvature thereof being substantially the same as that of the effective area of said shadow mask.

4,286,190

COMPACT FLUORESCENT LAMP HAVING A PARTITIONED ENVELOPE

Robert G. Young, Nutley, and Henry Skwirut, Verona, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 26, 1979, Ser. No. 79,016
Int. Cl.³ H01J *61/16*
U.S. Cl. 313—493 **10 Claims**



1. A low-pressure electric discharge lamp comprising;

an elongated envelope of vitreous light-transmitting material that has a sealed portion and contains an ionizable medium and a pair of spaced electrodes,

conductor means extending into said envelope and connected to the respective electrodes, and

an elongated partition assembly within said envelope having a plurality of panel segments that define a continuous discharge channel which extends between the electrodes and longitudinally traverses the envelope a predetermined number of times in retroverted fashion,

the panel segments of said partition assembly extending longitudinally along and inwardly from the walls of said envelope and being so shaped and arranged that they divide the envelope interior into a plurality of interconnected sectors and also form an elongated centrally-located chamber that constitutes the core of said partition assembly but is not part of the discharge channel,

the size of the core chamber defined by said partition assembly being correlated with that of the envelope and being such that the maximum cross-sectional dimension of the core chamber at a given location is from about 25% to about 85% of the maximum cross-sectional dimension of the envelope at the same location so that the discharge is displaced outwardly toward the envelope walls as it traverses the respective envelope sectors formed by the partition panel segments,

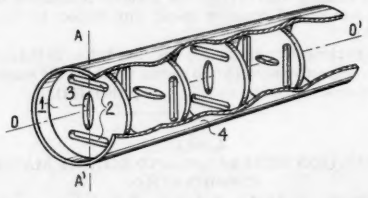
one of said electrodes being disposed at a location within the envelope that is remote from the sealed portion thereof and the associated conductor means being hermetically joined to said sealed portion and extending therefrom along the core chamber of the partition assembly to said remote electrode so that said core chamber thus also serves as a conduit for said associated conductor means.

4,286,191

DELAY LINE WITH COUPLED CAVITIES

Bernard Epsztein, and George Fleury, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 30, 1979, Ser. No. 44,340
Claims priority, application France, Jun. 2, 1978, 78 16552
Int. Cl.³ H01P *9/00;* **H01J** *23/24*
U.S. Cl. 315—3.6 **3 Claims**



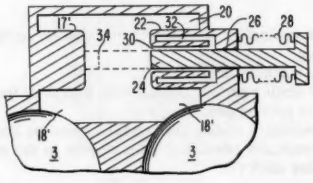
1. A delay line with coupled cavities constituted by a series of resonant cavities, separated from one another by walls pierced by two cavity coupling openings, symmetrical in relation to the axis of the line, and by an opening to allow through an electron beam, which in operation of the line is focussed along the axis of the line, wherein the opening to allow through the electron beam is substantially elliptical, with the center of the ellipse located on the axis of the line and the large axis of the ellipse aligned with the axis of symmetry of the cavity coupling openings.

4,286,192

VARIABLE ENERGY STANDING WAVE LINEAR ACCELERATOR STRUCTURE

Eiji Tanabe, Sunnyvale, and Victor A. Vaguine, Palo Alto, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 12, 1979, Ser. No. 84,284
Int. Cl.³ H01J *25/10*
U.S. Cl. 315—5.41 **12 Claims**



1. In a particle accelerator, a resonant acceleration circuit comprising at least three cavities having substantially the same resonant frequencies and electromagnetically coupled in sequence, a first and third of said cavities comprising holes through their walls for passage of a beam of particles and for coupling electromagnetic energy to said beam, a second cavity coupled to each of said first and third cavities, but uncoupled from said beam, the improvement comprising: means for changing the resonant mode pattern in said second cavity to

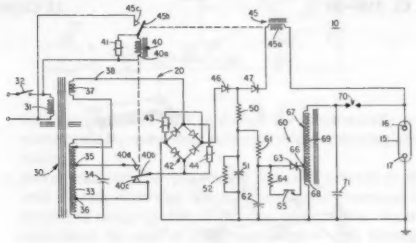
provide a change in phase of the wave energy coupled from said first cavity to said third cavity.

4,286,193

STARTING AND OPERATING CIRCUIT FOR GAS DISCHARGE LAMP

Ralph W. King, Jr., Streamwood, and Hans U. Hjermstad, Chicago, both of Ill., assignors to Johnson Electric Coil Company, Elmhurst, Ill.

Filed Feb. 12, 1979, Ser. No. 11,195
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—175 **15 Claims**



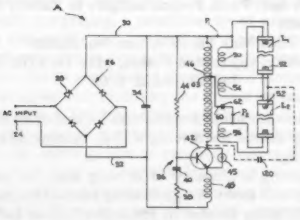
9. A circuit for starting and operating a gas discharge lamp comprising power supply means connected to the lamp and shiftable between a normal starting condition for applying a relatively high DC voltage to the lamp and a running condition for applying a relatively low DC voltage to the lamp, first control means coupled to said power supply means and operable in first and second conditions respectively for shifting said power supply means to the starting and running conditions thereof, second control means coupled to said first control means and connected in series with the lamp and responsive to the lamp current for shifting said first control means to the second condition thereof in response to starting of the lamp and for shifting said first control means to the first condition thereof in response to extinguishing of the lamp, and starting means coupled to said power supply means and to the lamp and responsive only to the relatively high DC voltage when said power supply means is in the starting condition thereof for producing a transient pulse of starting voltage and applying it to the lamp for starting thereof.

4,286,194

GENERATOR FOR USE WITH LOADS HAVING CHANGING IMPEDANCE CHARACTERISTICS

Eli H. Sherman, 12554 Havelock Ave., Los Angeles, Calif. 90066

Continuation-in-part of Ser. No. 961,976, Nov. 20, 1978, abandoned, which is a continuation of Ser. No. 857,220, Dec. 5, 1977, Pat. No. 4,129,805. This application Jun. 7, 1979, Ser. No. 45,111
Int. Cl.³ H05B *41/29*
U.S. Cl. 315—209 R **68 Claims**



1. A generator for starting and maintaining operation of a load which has a relatively high impedance during starting and a substantially lower impedance after starting and during operation, said generator comprising:

(a) power generating means for generating electrical power of a relatively high first voltage and relatively high impedance in a first mode and which is generally comparable to the impedance of said load during starting, and where the impedance of said load becomes substantially lower after starting, and said power generating means also capable of generating power of a second voltage and lower impedance in a second mode, and which second voltage is delivered from a portion of the power generating means which is different from that which delivers the first voltage, and

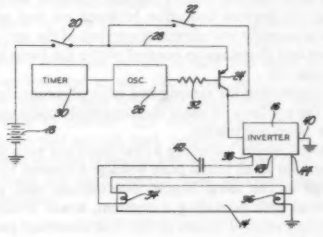
(b) capacitance operable means operatively connected to said means for generating electrical power and being operatively connectable to said load to enable generation and delivery of electrical power having a high impedance during starting of said load, said capacitance operable means being responsive to changes in the impedance of said load and causing a switching to the second mode, said power generating means capable of providing electrical power of a lower impedance generally comparable to the lower impedance of said load during the operation of said load to be delivered to said load after starting and during operation of the load, said capacitance operable means being effectively electrically switched out of a circuit relationship with said power generating means which said power generating means is switched to the second mode.

4,286,195

DIMMER CIRCUIT FOR FLUORESCENT LAMPS

Jessie D. Swinea, Jr., Royal Oak, Mich., assignor to Vultron, Inc., Waterford, Mich.

Filed Jul. 5, 1979, Ser. No. 54,778
Int. Cl.³ H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—224 **7 Claims**



1. The method of dimming a fluorescent lamp comprising the steps of, producing a first pulse train of voltage pulses of substantially constant amplitude having a repetition rate and pulse duration such that the pulse train has a first predetermined average value of on-time over a time interval which includes a plurality of the DC voltage pulses, applying said first pulse train with uniform polarity across the lamp, said constant amplitude and said first predetermined average value of on-time being sufficient to start said lamp and to run said lamp at a given intensity, changing said first pulse train to a second pulse train of DC voltage pulses having an amplitude the same as said substantially constant amplitude but having a second predetermined average value of on-time over a time interval which includes a plurality of the DC voltage pulses of the second pulse train, said second predetermined average value of on-time being less than the first predetermined average value of on-time but sufficient to run said lamp at an intensity less than said given intensity to thereby dim said lamp.

3. For use in controlling the intensity of a fluorescent lamp, said lamp being connected in a circuit of the type including an inverter having output terminals connected across the lamp

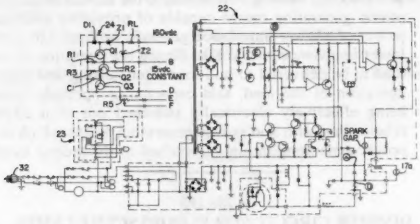
and having input terminals adapted to be connected with a DC voltage source, said inverter being adapted to produce a train of voltage pulses having a sufficient amplitude to start said lamp and to run said lamp at a given intensity, the improvement for reducing said intensity comprising an electronic switch connected with said inverter for inhibiting the output of said inverter when the electronic switch is actuated, and an oscillator connected with the electronic switch for periodic actuation thereof, each actuation being for a time duration small enough to maintain said lamp ionized whereby the intensity of said lamp is reduced.

4,286,196

AUTOMATIC DIMMER CUTOUT FOR ARC LAMP OF FIBER OPTIC LIGHT SOURCE

William F. Auer, 1654 E. Walnut, Des Plaines, Ill. 60016

Filed Feb. 14, 1980, Ser. No. 121,477
Int. Cl.³ G05F *1/00*
U.S. Cl. 315—307 **7 Claims**



1. A control device for initial triggering and subsequent intensity of a high intensity arc lamp having electrodes and receiving an initial high voltage to initiate ionization in the arc lamp to begin illumination, the improvement comprising:

sensing and control means having current limiting and switching devices operative between on and off conditions to monitor and permit triggering of the arc lamp and subsequent illumination control of the arc lamp by a dimmer control;

means connecting the sensing and control means electrically with the arc lamp to sense the electrical condition existing at the lamp electrodes;

said sensing means including a first electrical path for carrying current at an initial high voltage followed by a lower voltage as the lamp begins illumination, and, a second electrical path providing a constant, lower voltage;

first current control means in the first electrical path being coupled to a first switch means;

a third electrical path with means connected with the first electrical path and having second current limiting means and a second swtich means;

means connecting the second switch means with the second electrical path carrying the constant voltage;

a coupling and connecting path with means connected with the second switch means; and,

third switch means with means connected with an arc lamp control resistor and with the coupling and connecting path to connect with the second switch means;

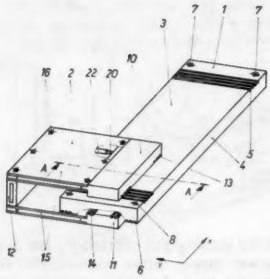
whereby after initial high voltage triggering and upon initial illumination of the arc lamp at a high voltage condition, the first switch means is biased into an on condition and thereby maintains the second switch means in an off, non-conducting condition, and, after initial illumination, the voltage in the first electrical path drops and is blocked from the first switch means by the first current control means, thereby permitting the second switch means to switch to the on condition, triggered by said lower, constant control voltage and thereby developing a bias permitting the third switch means to trigger to an on, conducting condition to electrically connect the lamp dimmer control into the circuit for adjusting the illumination of the arc lamp.

4,286,197

TWO-COORDINATE POSITIONING DEVICE

Riessland Eberhard, Karl-Rüdrich-Strasse 34, DDR-8010 Dresden; Helmut Beyer, Kurt-Schlosser-Strasse 19, DDR-8010 Dresden, and Erich Kossman, Hohe Strasse 28, DDR-8027 Dresden, all of German Democratic Rep.

Filed Feb. 26, 1979, Ser. No. 15,283
Claims priority, application German Democratic Rep., Feb. 28, 1978, 203869
Int. Cl.³ H02K *41/00*
U.S. Cl. 318—38 **11 Claims**



1. A two coordinate positioning device comprising a passive component having a first and a second active surface spaced a fixed distance in a direction transverse to the active surfaces from each other, said first active surface having spaced ridges of magnetizable material extending in the direction of a first coordinate and said second active surface having spaced ridges extending in the direction of a second coordinate; and an active component having only two electromagnetic pole systems, one of said two pole systems having on a surface thereof engaging said first active surface of said passive component ridges of magnetizable material extending in the same direction as those on said first active surface, the other of said electromagnetic pole systems being spaced in said transverse direction from said one pole system and having on a surface thereof engaging said second active surface of said passive component spaced ridges of magnetizable material extending in the same direction as those on said second active surface, and a connecting member connecting said spaced pole systems to each other, whereby said ridges of said pole systems cooperate with those on said active surfaces to generate a relative movement of said components in the direction of one or the other of said coordinates upon imparting timed impulses to the respective pole system.

4,286,198

DIRECT CURRENT MOTOR UNIT WITHOUT COMMUTATOR

Pierre de Valroger, Paris, France, assignor to Valbrev S.A.R.L., Paris, France

Filed May 11, 1979, Ser. No. 38,188
Claims priority, application France, May 11, 1978, 78 13999
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—138 **8 Claims**

1. An electro-mechanical motor unit formed of an electronic power supply device for driving a D.C. commutatorless motor, comprising:

a stator having a plurality of driving coils for supplying power to said motor for generating an axial magnetic flux, said coils being housed in respective ferrite half-pots of axial generatrices;

at least one thin-wire control coil magnetically intercon-

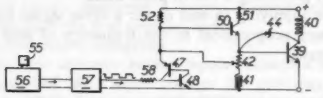
nected with said plurality of driving coils and adapted for generating a variable control signal in response to operational speed of said motor;

a rotor having an axially-magnetized ring;

at least one magnetized positioning stud on said stator in a location thereof such as to bring said rotor at rest in a precise angular position relative to said stator;

a motive torque output shaft adjacent to but spaced from said rotor ring;

rotor speed responsive, centrifugal clutch means interposed



between said rotor and said shaft for mechanically interconnecting the same only subsequent to the starting of said rotor;

a power transistor for generating pulses of current to drive said driving coils and having a collector electrode connected to said plurality of driving coils, a base electrode controlled by said at least one control coil through a resistor; and

a Zener diode having a nominal breakdown voltage lower than the breakdown voltage of said power transistor and connected between said base and collector electrodes.

4,286,199

HELICAL SCAN RECORDER HAVING CAPSTAN MOTOR SPEED RESPONSIVE TO A FREQUENCY OF A COMMAND SIGNAL

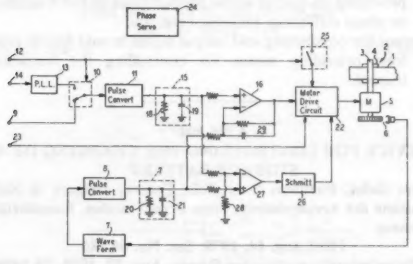
Yoshio Nagakubo, Kanagawa, and Masayuki Takano, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,586

Claims priority, application Japan, Feb. 8, 1979, 54-13607; Feb. 8, 1979, 54-13608

Int. Cl.³ H02P 5/16

U.S. Cl. 318—327 **2 Claims**



1. A motor speed control circuit for a motor of a video tape machine operable to move the tape at normal or at search mode speeds comprising, a rotational speed generator associated with said motor and producing a series of pulses which have a pulse repetition rate indicative of the motors speed, a motor drive circuit supplying a signal to said motor, a first saw tooth wave generator receiving the output of said rotational speed generator, a first integrating circuit receiving the output of said first saw tooth generator, a phase lock loop generator, a second saw tooth generator receiving either the output of said phase lock loop or a variable frequency search command signal, a second integrating circuit receiving the output of said second saw tooth wave generator, a first comparison circuit receiving the outputs of said first and second integrating circuits on its negative and positive input terminals respectively, and supplying an input to said motor drive circuit, and the time constant of said first integrating circuit being larger than the time constant of said second integrating circuit.

4,286,200

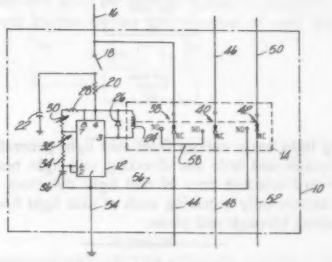
UNIVERSAL INTERMITTENT WINDSHIELD WIPER CIRCUIT

Ralph V. Brown, Cayuta, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Jun. 8, 1979, Ser. No. 47,173

Int. Cl.³ H02P 1/04

U.S. Cl. 318—443 **12 Claims**



1. An intermittent windshield wiper circuit connectable to the windshield wiper mechanism of a vehicle to provide an intermittent mode of operation comprising:

timer means, operative to be energized by the vehicles' source of electrical power for generating pulse signals at predetermined intervals; and

switch means actuated by said pulse signal for switching signals between at least a first, a second, a third, a fourth, and a fifth lead, said switch means having a first state in the absence of said pulse signals and switchable to a second state in response to said pulse signals, said switch means in said first state operative to connect the vehicle's source of electrical power to said first lead, to connect said second lead to said third lead, and to connect said fourth lead to said fifth lead, and in said second state operative to connect the vehicle's source of electrical power to said second lead, connect said fourth lead to a common ground potential and wherein said first, third and fifth leads are disconnected from all other leads in said second state.

4,286,201

AUTOMATIC PART POSITIONING SYSTEM

Carl C. Roecks, and Stuart C. Baker, both of Palos Verdes Estates, Calif., assignors to Amistar Corporation, Torrance, Calif.

Filed Feb. 21, 1979, Ser. No. 13,180

Int. Cl.³ G05B 1/06

U.S. Cl. 318—640 **9 Claims**

1. An automatic part positioning system for precisely locating, with respect to a component inserting tool, a printed circuit board and the like with at least one hole therethrough, the system comprising

a circuit board-supporting frame movable in a predetermined plane with two degrees of freedom;

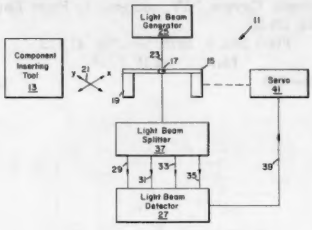
servo means operatively coupled to said frame for moving said frame in said plane in response to error signals;

light generating means positioned adjacent one side of said frame for generating at least one beam of light toward said frame;

light detecting means disposed on the side of said frame opposite said light generating means and including two pairs of light detectors, each pair lying on a different one of two orthogonal lines for producing error signals rela-

tive to the direction of said orthogonal lines when said detectors are not illuminated equally; and

beam dividing means disposed between said light generating means and said light detecting means on said side of said frame opposite said light generating means and intercepting light beam energy from said light generating means through said hole and directing said light beam energy toward selected ones of said light detectors, said light detectors only receiving such of said light beam energy passing through said plane.

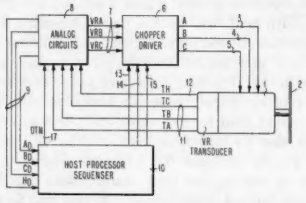


4,286,202

ELECTRONIC DAMPING OF STEPPER MOTOR

Douglas E. Clancy, Austin; Richard F. Frankeny, Elgin, and George P. Olson, Austin, all of Tex., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,777
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **13 Claims**



1. A method of controlling a multi phase stepper motor having a set of windings for each of its phases to provide damping and detenting of the rotor of said motor under control of a damping signal at a selected final position in alignment with one of said sets of windings selected as the detent position, said method comprising:

developing an analog feedback signal which is related to the angular velocity and position of said rotor during said damping mode,

applying a unique current to each of said phase windings which is related to said analog signal in a direction to produce retardation of said rotor rotation as said rotor approaches said detent position, and

applying an additional current to the phase windings of said detent phase.

4,286,203

SLIP FREQUENCY CONTROL FOR VARIABLE SPEED INDUCTION MOTORS

Robert J. Ehret, Los Altos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 14, 1979, Ser. No. 20,389
Int. Cl.³ H02P *5/34, 7/42, 5/28, 5/36*
U.S. Cl. 318—801 **8 Claims**

1. A closed-loop drive system for variable speed induction motors comprising:

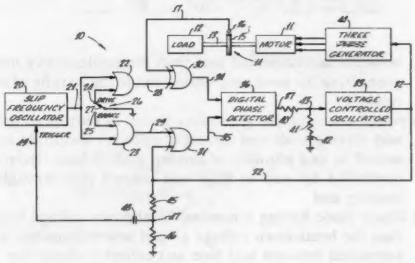
means for providing a first pulse train having a frequency proportional to the actual rotational speed of said motor;

means for providing a second pulse train having a frequency proportional to the desired slip of said motor;

a first exclusive OR gate responsive to said first pulse train and selectively responsive to said second pulse train for providing a third pulse train having a frequency proportional to the sum of the frequencies of said first and second pulse trains during driving of said motor and proportional to the frequency of said first pulse train only during braking of said motor;

means for providing a fourth pulse train;

means for supplying to said motor a drive signal having a frequency proportional to the frequency of said fourth pulse train;



a second exclusive OR gate responsive to said fourth pulse train and selectively responsive to said second pulse train for providing a fifth pulse train having a frequency proportional to the sum of the frequencies of said second and fourth pulse trains during braking of said motor and proportional to the frequency of said fourth pulse train only during driving of said motor;

means responsive to said fourth pulse train for triggering said second pulse train providing means to prevent pulses of said second and fourth pulse trains from having exactly coincident transitions;

means responsive to said third and fifth pulse trains for providing an output signal proportional to the frequency or phase difference therebetween; and

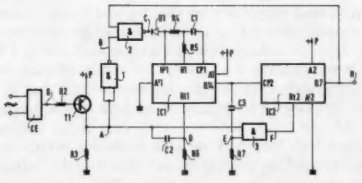
means for conducting said output signal to said fourth pulse train providing means for controlling the frequency thereof.

4,286,204

DEVICE FOR CONTROLLING THE CHARGING OF A STORAGE BATTERY

Pierre Belot, Pavillons Sous Bois, France, assignor to Saft-Societe des Accumulateurs Fixes et de Traction, Romainville, France

Filed Aug. 14, 1979, Ser. No. 66,384
Claims priority, application France, Aug. 30, 1978, 78 24996
Int. Cl.³ H02J *7/04, 9/06*
U.S. Cl. 320—31 **8 Claims**



1. A device for controlling the charging of a storage battery which is used for supplying emergency power when mains

current is interrupted, said device including first means for detecting when no mains current is being supplied, second means for comparing the time during which no mains current is supplied with a first predetermined period, third means for measuring a second predetermined period during which the battery is recharged at a given rate and fourth means for controlling the second and third means in response to data given by the first means, wherein:

the data given by the first means comprises a first datum corresponding to the presence of mains current and a second datum corresponding to the absence of mains current,

the second means comprises a first counter and a clock, the third means comprises a second counter connected in series with the first counter, and

the fourth means comprises

a first logic operator having inputs connected to the first means and the second counter for receiving said data given by the first means and additional data which correspond to the state of the second counter and having an output which transmits a third datum upon concurrent receipt of said second datum from the first means when the mains current is supplied and a fourth datum from the second counter corresponding to the second counter having reached a predetermined state, said output of the first logic operator being connected to the clock for allowing the clock to operate in all cases except when said third datum is being emitted;

a means for transmitting said second datum from the first means to the first counter for initiating said first counter when mains current is interrupted; and

a second logic operator having inputs connected to said first means and said first counter and an output which emits a fifth datum upon concurrent receipt of said second datum from the first means and a sixth datum which corresponds to a predetermined state of the first counter for initiating the second counter when mains current is still absent after the first counter has reached said predetermined state.

4,286,205

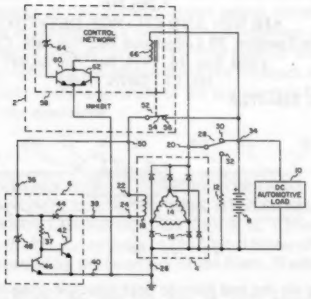
INTERFACE CIRCUIT FOR STANDARD VOLTAGE REGULATORS

Donald L. Watrous, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,219

Int. Cl.³ H02J 7/16

U.S. Cl. 322—8 **12 Claims**



1. In combination with a vehicle alternator employed to energize a standard load and battery, said alternator having a field winding coupled to a standard voltage regulator which together with said alternator provides a field current path through which flows field current that is modulated by said standard regulator for normally regulating the alternator output in accordance with a reference battery voltage, a voltage regulator interface circuit for additionally regulating said alternator output in accordance with a further reference voltage so as to provide energization for an auxiliary load, comprising:

(a) a current control device coupled in said field current path in series with said battery and being external to said alternator and said standard regulator for providing an added control of said field current;

(b) switching means for selectively coupling said alternator output to said battery or to said auxiliary load; and

(c) control means responsive to a variable voltage that is a function of said alternator output for generating a control signal that operates said current control device, whereby an additional voltage regulation of said alternator output in accordance with said further reference voltage may be superimposed upon the normal voltage regulation of said alternator output during energization of said auxiliary load.

4,286,206

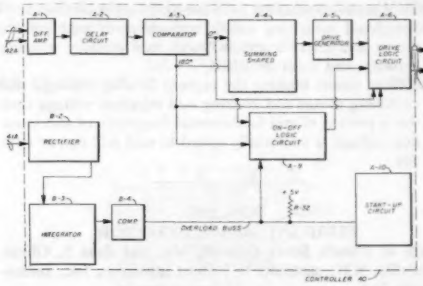
LOAD-RESPONSIVE TREATER CONTROLLER

Roger K. Odom, Redwood City, Calif., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 9, 1979, Ser. No. 82,442

Int. Cl.³ G05F 1/45

U.S. Cl. 323—244 **10 Claims**

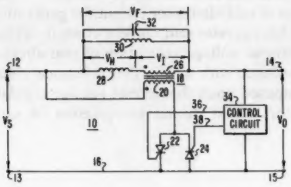


8. A method of controlling the disconnection and reconnection of an electrical a.c. power supply to an inductive load through a solid state switch connected between the supply and load including: sampling the voltage waveform of the supply and establishing a signal representative of the waveform, detecting the zero crossing of the voltage wave form and generating square waves each of which represents zero wave crossings of the mains voltage, shifting the square waves into their relation to the supply zero voltage crossings, establishing timing reference signals at the beginning of each square wave to represent 0° zero crossing reference and at the end of the square wave to represent 180° zero crossing reference utilizing the timing reference signals to generate square waves of relatively short duration which represent each delayed zero voltage crossing, generating a chain of pulses by the square waves of relatively short duration, and actuating the solid state switch by the pulse chain in a sequence controlled by the timing reference signals to disconnect and reconnect the supply to the load, whereby the solid state switch is reconnected at that predetermined delay from the zero crossing of the supply voltage and at that polarity which will balance the residual flux remaining in the inductive load after the preceding disconnection.

4,286,207
HIGH-POWER AC VOLTAGE STABILIZER

Robert J. Spreadbury, Murrysville, and James M. Banic, Jr., Greenville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 14, 1980, Ser. No. 140,054
Int. Cl.³ G05F *1/26*
U.S. Cl. 323—263 **11 Claims**

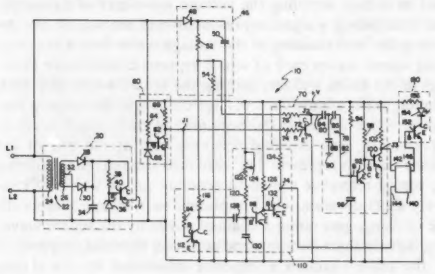


1. An apparatus for stabilizing an AC voltage at high-power levels, comprising:
- a pair of input terminals adapted for connection to a source of AC voltage;
- a pair of output terminals adapted for connection to an input voltage-sensitive load, one of said output terminals connected to one of said input terminals;
- an injection transformer having a primary winding and a secondary winding, said secondary winding producing an injection voltage having a fundamental frequency, said secondary winding connected between the other one of said input terminals and the other one of said output terminals;
- control means connected between said output terminals;
- bidirectional switching means responsive to said control means and series connected with said primary winding between said input terminals;
- and filter means limiting the current flowing through said switching means and filtering said injection voltage such that a portion of said fundamental frequency of said injection voltage is vectorially added to said AC source voltage.

4,286,208
FLUID INTERFACE DETECTOR

George R. French, South Berwick, Me., and John S. Oliver, Danville, N.H., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jan. 7, 1980, Ser. No. 110,009
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—61 R **20 Claims**

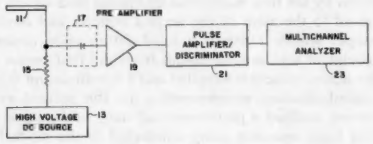


1. A fluid interface detector, comprising a circuit for detecting the presence of at least two fluids to establish an interface level between the fluids, the circuit producing an output signal of varying duration determined by which fluid is present, at least one circuit for producing at least one reference signal of a predetermined duration, and means for comparing the duration of the output signal of the detection circuit to the predetermined duration of the reference signal and producing a signal indicative of which fluid is present.

4,286,209
SMALL CONDUCTIVE PARTICLE SENSOR

Israel Taback, Newport News, Va., and Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Israel Taback

Filed Aug. 28, 1979, Ser. No. 70,366
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71 CP **3 Claims**

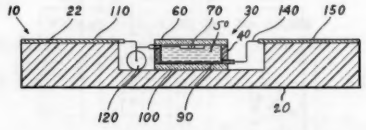


1. A device for detecting conductive particles, counting them, measuring their length, and determining the concentrations of different length particles per unit volume over a period of time comprising:
- a sensor wire made of an electrically conductive material;
- a high voltage DC source and a load resistor connected in series with said sensor wire for charging said wire to a high DC voltage whereby whenever a conductive fiber touches said wire the fiber becomes charged thereby removing part of the charge from said wire; and
- means for detecting the discharges of said wire wherein said detecting means is electrically connected between said sensor wire and said load resistor by a coupling means for isolating the direct current constant voltage of the source from the detecting means and passing the high frequency AC pulse signal generated by a fiber touching said wire to said detecting means.

4,286,210
AIR ION AND CHARGE DETECTOR

Vladimir Ignatjev, 39 Ledgewood Dr., Norwalk, Conn. 06850

Filed Aug. 16, 1979, Ser. No. 66,937
Int. Cl.³ G01N *31/02*
U.S. Cl. 324—72.5 **8 Claims**



1. An air ion and electric field detector comprising two electroconductive surfaces insulated from each other,
- a liquid crystal display having a large-area reference electrode and two small-area indicating electrodes, one in the shape of a plus sign and one in the shape of a minus sign, the reference electrode connected to one of the conductive surfaces, the two indicating electrodes connected to the other surface through two diodes, one oriented to pass the current to the plus sign, the other from the minus sign to the conductive surface.

4,286,211
DIRECT CURRENT DETECTING DEVICE USING SATURABLE REACTORS

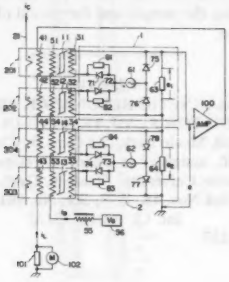
Kiyoshi Nakamura, Ibaraki; Hiroaki Ishikawa, Kawasaki; Hisakatsu Kiwaki, and Fumio Ogata, both of Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1979, Ser. No. 89,372

Claims priority, application Japan, Oct. 30, 1978, 53-134077; Oct. 30, 1978, 53-134078

Int. Cl.³ G01R *33/00, 1/22*

U.S. Cl. 324—117 R **15 Claims**



1. A device for detecting a d.c. current flowing through a conductor, comprising:

a first and second pair of saturable cores each enclosing said conductor;

a first and a second plurality of output windings wound on said first and second pair of saturable cores respectively;

a feedback winding wound on each of said saturable cores;

first and second output circuits connected with said first and second plurality of output windings, respectively, each output circuit comprising a first closed current path including an A.C. voltage source, one of said plurality of output windings, and a load and a second closed current path including said A.C. voltage source, the other one of said plurality of output windings, and said load, said first and second closed current paths including selection means for selecting the greater one of two current flows of said two closed current paths to be supplied to said load; and

an amplifier having an input connected to said first and second output circuits to receive a difference between the output signals of the first and second output circuits and an output connected with said feedback windings to supply an output current of the amplifier to said feedback windings, whereby the magnitude of the feedback current is a function of the magnitude of the d.c. current flowing through the conductor.

4,286,212
VARIABLE SIGNAL GENERATOR FOR GALVANOMETER EXHIBITING HYSTERESIS

David L. Staebler, Lawrenceville, and George R. Latham, Jr., Trenton, both of N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 788,332, Apr. 18, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,571

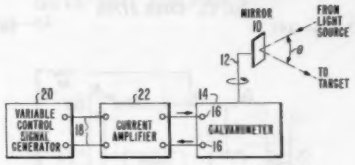
Int. Cl.³ G01R *1/14;* **H02K** *33/18;* **G02B** *27/17*

U.S. Cl. 324—125 **7 Claims**

1. In a variable control signal generator having an output adapted to be coupled to a galvanometer which exhibits hysteresis, said generator selectively applying any one of a predetermined number of separate discrete control signals to said output thereof for angularly displacing a rotatable member of said galvanometer by an amount which is an analog of the respective value of the control signal then applied to said output; the improvement wherein said generator comprises:

(a) switch means having said predetermined number of switch positions, said switch means being operable to any ordinal one of the predetermined number of switch positions thereof;

(b) reference signal means coupled between said switch means and said output and responsive to said switch means



being operated between switch positions thereof for applying a certain reference signal to said output for a given time after said operation of said switch means, and

(c) control-signal means coupled between said switch means and said output and responsive to said switch means remaining in any selected switch position for more than said given time for applying a selected one of said control signals to said output in accordance with the then selected switch position of said switch means.

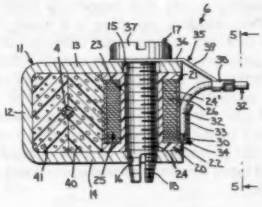
4,286,213
ENERGY SENSOR

Thomas P. Fowler, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.

Filed Mar. 19, 1979, Ser. No. 21,721

Int. Cl.³ G01R *31/02*

U.S. Cl. 324—127 **6 Claims**



1. A removable energy sensor for monitoring the flow of electrical energy through a current carrying conductor, said sensor comprising:

(a) a generally U-shaped flux conducting bracket for receiving a said conductor therethrough and having an inner end portion closed by a base portion which joins a pair of spaced outwardly directed legs terminating in an open outer end portion remote from said base portion,

(b) a removable assembly extending between said legs adjacent the said open outer end portion of said bracket, said assembly including:

(1) an insulator extending between said legs,

(2) and a coil of electrically conductive wire mounted on said insulator and with said wire having at least one output lead for providing an output signal substantially proportional to current flow through the said current carrying conductor,

(c) and a removable flux conducting retainer member mounting said assembly to said legs,

(d) said retainer member extending through said assembly and forming, together with said U-shaped bracket, a closed loop circuit for conducting flux about the said

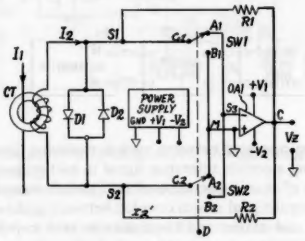
conductor in response to current flow through the said conductor.

4,286,214

CURRENT SENSOR FOR PHASE INVERSION-MODULATION OF AC SIGNALS

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed May 7, 1979, Ser. No. 36,770
Int. Cl.³ G01R *21/06*
U.S. Cl. 324—142 **14 Claims**



1. In combination:

(a) a low impedance current transformer having primary and secondary windings adapted for conducting primary and secondary currents respectively;

(b) a very low input impedance operational amplifier having first and second input terminals and an output terminal; and

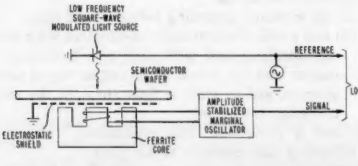
(c) a switch, having substantially zero resistance, interconnecting the secondary winding of said current transformer with the first and second input terminals of said operational amplifier for switching the polarity of the secondary current of said current transformer between the first and second input terminals of said operational amplifier while providing a very low impedance connected across the secondary winding, resulting in a negligible potential across the first and second input terminals of said operational amplifier, and providing an output voltage from the output terminal of said operational amplifier having an amplitude proportional to the magnitude of the primary current of said current transformer and having a phase, with respect to the phase of the primary current, determined by the polarity of the current applied to the first and second input terminals of said operational amplifier by said switch.

4,286,215

METHOD AND APPARATUS FOR THE CONTACTLESS MONITORING CARRIER LIFETIME IN SEMICONDUCTOR MATERIALS

Gabriel L. Miller, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 18, 1979, Ser. No. 40,394
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 R **9 Claims**



1. A method for contactless steady-state monitoring of minority carrier lifetime in a sample of semiconductor material, comprising

(a) electromagnetically coupling the sample into an inductance-capacitance resonant circuit adapted to resonate at a measurement frequency,

(b) intermittently illuminating, at a switching frequency substantially lower than the inverse of the minority carrier lifetime, at least part of the sample adjacent to the coupling means with electromagnetic radiation adapted to cause photoconductivity in the sample, and

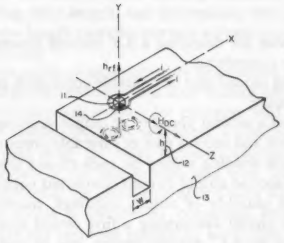
(c) measuring the difference in measurement frequency voltage across the resonant circuit between the period of illuminating the sample and the period of nonilluminating the sample.

4,286,216

FERROMAGNETIC RESONANCE PROBE AND METHOD FOR FLAW TESTING IN METALS

Bertram A. Auld, Menlo Park, and Gary W. Elston, Santa Clara, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Nov. 15, 1978, Ser. No. 961,046
Int. Cl.³ G01R *33/12*
U.S. Cl. 324—237 **9 Claims**



1. A probe for scanning a metal surface to test for flaws in the metal surface comprising a ferromagnetic resonator, means for applying a d.c. bias magnetic field, H_{DC}, to said resonator, means for applying an rf magnetic field h_{rf} to said resonator orthogonally to said d.c. magnetic field, and means coupled to said resonator for detecting changes in the resonant frequency of said resonator responsive to flaws in the metal surface under test.

4,286,217

DEVICE FOR ELECTRODE-TYPE ELECTRICAL LOGGING TOOLS AND TOOL INCORPORATING SAID DEVICE

Jean Planche, Chevilly Larue; Jacques Tromelin, Longjumeau, and Daniel Vannier, Versailles, all of France, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Feb. 1, 1979, Ser. No. 8,302
Int. Cl.³ G01V *3/20*
U.S. Cl. 324—347 **10 Claims**

1. A unitized electrode assembly adapted for removable mounting, as a unit, on electrode-type electrical logging tools having a central mandrel and comprising:

a metal tube having an internal diameter substantially greater than the external diameter of the central mandrel of the tool for which it is adapted, for freely and at least partially and removably receiving therein the central mandrel of such an electrode-type logging tool;

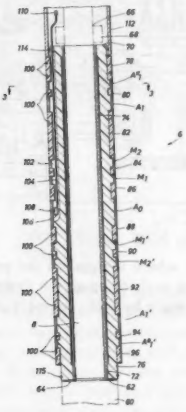
first electrically-insulating means coaxially arranged on said metal tube;

second electrode-supporting electrically-insulating means coaxially arranged on said first means;

a plurality of longitudinally-spaced electrodes spatially ar-

ranged at spaced intervals along and supported upon said second means;

a plurality of electrically-insulating spacers respectively arranged on said second means between said electrodes and adapted for maintaining said electrodes at selected positions thereon;



means for securing said spacers on said second means;

means defining conductor passages extending between said second means and said electrodes and spacers; and

conductor means in said conductor passages respectively connected to said electrodes for electrically connecting said electrodes to such a logging tool.

4,286,218

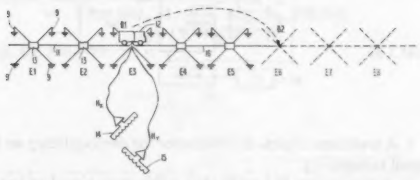
MULTIPLE SITE MAGNETOTELLURIC MEASUREMENTS

Marvin G. Bloomquist, Arlington; Gustave L. Hoehn, Jr.; Lonnie J. Norton, both of Dallas, and Barry N. Warner, Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 63,491

Int. Cl.³ G01V *3/08*

U.S. Cl. 324—350 **9 Claims**



1. A magnetotelluric exploration method comprising:

measuring the earth's electric field at a plurality of locations spaced along a line of exploration;

transmitting said measurements to a mobile exploration vehicle in a first direction on a cable extending to one side of said mobile exploration vehicle;

recording said electric field measurements in said exploration vehicle;

measuring the magnetic field of the earth in at least the area of said exploration vehicle simultaneously with the aforesaid measurements of electric field;

recording said magnetic field measurements in said exploration vehicle; and

repeating the steps of measuring the earth's electric field at said plurality of locations transmitting said measurements in the other direction to said mobile exploration vehicle on said cable and recording said measurements to obtain overlapping measurements of electric field at each of said locations.

4,286,219

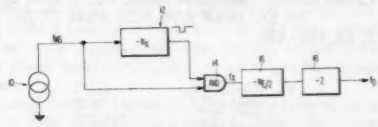
HIGH RESOLUTION FREQUENCY SYNTHESIZER

Shanti S. Gupta, Gaithersburg, Md., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Sep. 27, 1979, Ser. No. 79,603

Int. Cl.³ H03L *7/00*; H03B *19/00*

U.S. Cl. 328—14 **8 Claims**



1. A high resolution frequency synthesizer for producing a pulse train of frequency f_D comprising: an oscillator producing an output pulse train having a clock frequency of f_{ms}, a programmable divider receiving an input signal that is a function of f_{ms} and performing a division thereon in accordance with:

$$[(N_E+N_R)f_D]/N_Rf_D$$

where,

N_E is an even number higher but not exceeding f_{ms}/f_D, and

N_R is the remainder of f_{ms}/f_D-N_E, either a whole number or fraction but not a negative quantity

to obtain an output f_x, that is the frequency or number of bits per second which is an even multiple of f_D and means for obtaining a symmetrical waveform from f_x which is f_D.

4,286,220

METHOD AND DEVICE FOR DISCRIMINATING DIFFERENCE FREQUENCY OF TWO PULSE TRAINS

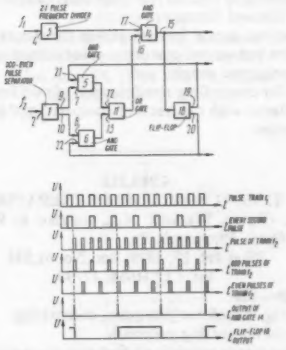
Eduard A. Zalessky, ulitsa Tashkentskaya, 130, kv. 11, and Vladimir V. Smyshlyaev, ulitsa Michurina, 116 kv. 57, both of Kuibyshev, U.S.S.R.

Filed Jan. 29, 1979, Ser. No. 7,511

Claims priority, application U.S.S.R., Feb. 10, 1978, 2578262; Feb. 10, 1978, 2600021

Int. Cl.³ H03K *5/26*

U.S. Cl. 328—133 **2 Claims**



1. A method of determining the frequency difference of two pulse trains, said method comprising the steps of

separating the pulses of one pulse train into odd and even pulses;

separating every second pulse in another pulse train;

checking every second pulse of said other pulse train for coincidence with the even pulses of said one pulse train;

checking, after said coincidence, every second pulse of said

other pulse train for coincidence with the odd pulses of said one pulse train;

discriminating the sequence of said coincidences; and

determining the frequency of the discriminated sequence of coincidence, which is the frequency difference of said pulse trains.

4,286,221

MULTI-FREQUENCY SIGNAL RECEIVING APPARATUS

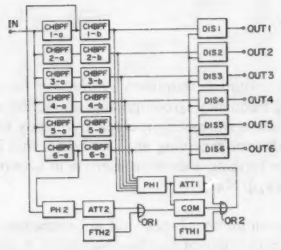
Kazuhiko Takaoka, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1979, Ser. No. 81,359

Claims priority, application Japan, Oct. 4, 1978, 53-121543

Int. Cl.[3] H03K *9/06, 5/26;* **H04L** *27/26*

U.S. Cl. 328—140 **6 Claims**



1. A multi-frequency signal receiving apparatus which receives multi-frequency input signals, separates and selects said multi-frequency input signals comprising,

means for separating said multi-frequency signals, said means being a plurality of channel filters for discriminating required signals out of said input signals;

means for discrimianting any predominant frequency signals out of the signals filtered by said plurality of channel filters;

a first maximum value detecting means for detecting the maximum value of the levels of the outputs of said plurality of channel filters;

a second maximum value detecting means for detecting the maximum value of the levels of the outputs at an intermediate stage of two channel filters which discriminate the signals at both ends of the frequency bands of said plurality of channel filters;

a comparison means for comparing the detected values of said first and second maximum value detecting means with an appropriate weight; and

a means for controlling the detection of said input signals in accordance with the result of comparison of said comparison means.

4,286,222

TIMING WAVEFORM GENERATOR

William R. Caputo, Wyckoff, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 27, 1979, Ser. No. 61,531

Int. Cl.[3] H03K *12/00*

U.S. Cl. 328—155 **11 Claims**

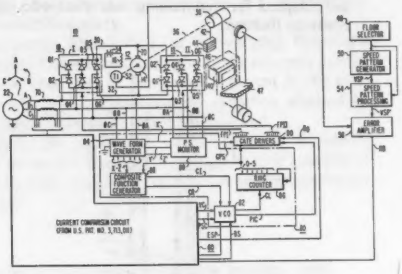
1. A timing waveform generator, comprising:

a source of alternating potential,

transducer means providing a first sine wave signal synchronous with said source of alternating potential,

and phase shift means providing timing waveform which lags said first sine wave by a predetermined angle,

said phase shift means including filter means and hysteresis means, said filter means filtering said first sine wave signal to provide a second sine wave signal which lags the first sine wave signal by a first angle, with the filter means being selected such that the first angle is less than said predetermined angle, said hysteresis means generating said timing waveform in response to said second sine wave signal, with said hysteresis means having a predetermined threshold selected to delay the timing waveform by a



second angle which is equal to the predetermined angle minus the first angle to cause the timing waveform to lag the first sine wave by said predetermined angle.

4,286,223

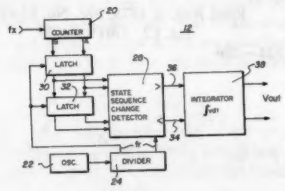
WIDEBAND DIGITAL FREQUENCY DISCRIMINATOR AND PHASE AND FREQUENCY DETECTOR

Harry D. Shearer, St. Petersburg, Fla., assignor to E-Systems, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 906,030, May 15, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 78,916

Int. Cl.[3] H03D *3/18;* **H03K** *9/06*

U.S. Cl. 329—50 **37 Claims**



1. A wideband digital discriminator for demodulating an FM signal comprising:

(a) timing means for producing a reference signal of known frequency;

(b) counting means operative at the rate of the FM signal for generating at the output thereof a cyclical signal comprising a repeated series of nonambiguous states;

(c) means for sampling the state of the cyclical signal generated at the output of said counting means at a rate determined by said reference signal and for storing at least two consecutive sampled states of said cyclical signal; and

(d) detection means operating at a rate determined by said reference signal and connected to receive said stored sampled states for detecting a state difference between the sampled states of said cyclical signal, said detection means generating an output signal when a state difference is detected.

4,286,224
FM DATA DEMODULATOR INCLUDING CIRCUIT FOR ELIMINATING STEP DISTORTION

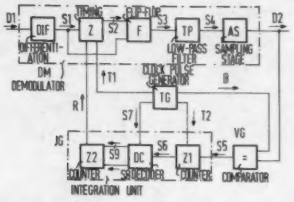
Werner Paetsch, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 12, 1979, Ser. No. 102,669

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1978, 2854833

Int. Cl.[3] **H03D** *3/00;* **H03K** *9/06;* **H04L** *27/14*

U.S. Cl. 329—107 **6 Claims**



1. A circuit arrangement for the correction of step distortions of given step frequency in a transmission of data by use of frequency-modulated data signals, comprising:

demodulator means for comparing time durations between edges of the frequency-modulated data signals with a measuring time duration generated by a timing element in the demodulator means, said demodulator means generating filtered demodulated data signals which have step distortions as a result of frequency deviations of the frequency-modulated data signals;

comparator means for comparing momentary values of the demodulated data signals with momentary values of reference signals generated by a clock pulse generator whose repetition rate is equal to twice the step frequency of the demodulated data signals; and

integration means for integrating an output signal fo said comparator means and emitting control signals to said demodulator means, said control signal being fed to the timing element to oppose said step distortions of the demodulated data signals by changing the measuring time duration of the timing element.

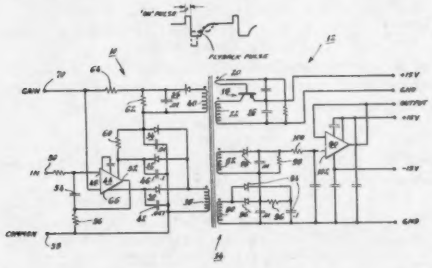
4,286,225
ISOLATION AMPLIFIER

William H. Morong, III, Perry, Me., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Dec. 31, 1979, Ser. No. 108,540

Int. Cl.[3] **H03F** *3/38*

U.S. Cl. 330—10 **28 Claims**



1. An electrical signal isolator comprising:

input and output sections;

a transformer coupling said input and output sections;

a first amplifier forming part of said input section to receive an input signal;

a second amplifier forming part of said output section to develop an output signal;

means for generating in said transformer an alternating pulse signal comprising a power pulse followed by a flyback pulse;

first winding means for said transformer;

a first diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said first winding means;

said first rectifier circuit being poled to respond to said flyback pulse;

means coupling said first amplifier to said first half-wave rectifier circuit to effect modulation of the magnitude of said flyback pulse in accordance with said input signal;

a second diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said first winding means;

said second rectifier circuit being poled to respond to said power pulse to produce a d-c power voltage for said first amplifier;

a third diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said first winding means;

said third rectifier circuit being poled to respond to said flyback pulse to develop a d-c negative feedback signal for said first amplifier;

second winding means for said transformer separate from said first winding means;

a fourth diode/capacitor half-wave rectifier circuit forming part of said input section and coupled to said second winding means;

said fourth rectifier circuit being poled to respond to said power pulse to produce a d-c level shifting voltage;

means connecting said level-shifting voltage in series with said feedback signal to provide a feedback voltage level within the operating range of said first amplifier;

third winding means for said transformer separate from said first and second winding means; and

diode/capacitor rectifier means coupled to said third winding means to develop an input signal for said second amplifier.

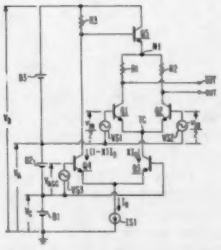
4,286,226
AMPLIFIER WITH ELECTRICALLY CONTROLLED GAIN, WITH OUTPUT SUITABLE FOR DIRECT COUPLING

Arthur J. Leidich, Raritan Township, Somerset County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 14, 1979, Ser. No. 66,335

Int. Cl.[3] **H03F** *1/30, 3/68*

U.S. Cl. 330—254 **9 Claims**



1. An amplifier with electrically controlled gain, comprising:

first and second transistors arranged in long tailed pair connection, with a resistive load of resistance R_L to which the output electrode of the first transistor connects, means for

applying input signal between their respective input electrodes for causing an output signal across said resistive load, and a tail connection between the common electrodes of said first and second transistors;

constant current generator means for generating a current of magnitude I_O;

third and fourth transistors arranged in adjustable current splitter configuration with the current of magnitude I_O flowing through an interconnection between their common electrodes, provision being made for a control voltage being applied between their input electrodes, the current from the output electrode of said third transistor being applied to said tail connection between the common electrodes of said first and second transistors and having a value xI_O, with x of a value depending on said control voltage and lying in a range between zero and unity (whereby the quiescent voltage across said resistive load has a component that changes proportional to x equalling $xI_OR_L/2$), and the current from the output electrode of said fourth transistor changing proportional to $(1-x)I_O$;

current-to-voltage converter means responsive to said current changing proportional to $(1-x)I_O$ providing a voltage component proportional to $(1-x)I_O$ by such scaling factor that the voltage substantially equals $(1-x)I_OR_L/2$, wherein said current-to-voltage converter means includes an auxiliary resistor and means for applying said current changing proportional to $(1-x)I_O$ to said auxiliary resistor to develop thereacross said voltage substantially equal to $(1-x)I_OR_L/2$; and

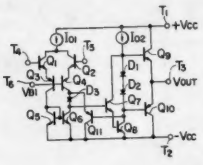
means for summing the voltage component appearing across said resistive load that changes proportional to x together with said voltage component proportional to $(1-x)I_O$ to obtain an output voltage wherein output signal is superimposed on a quiescent voltage that does not substantially change due to change in x.

4,286,227

TRANSISTOR AMPLIFYING CIRCUIT FOR PREVENTING THE OPERATION OF AN AMPLIFYING TRANSISTOR IN THE QUASI-SATURATION REGION

Tetsuo Sato, Fussa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,206
Claims priority, application Japan, Jul. 24, 1978, 53-89450
Int. Cl.³ H03F *3/45, 3/18, 1/42*
U.S. Cl. 330—255 **9 Claims**



1. A transistor circuit comprising:

a first transistor;

a second transistor of the same conduction type as said first transistor;

a third transistor of the opposite conduction type to said first transistor and having its collector connected to the emitter of said first transistor; and

level-shift diode means;

said first transistor and said second transistor being connected with each other in a Darlington circuit arrangement;

said second transistor forming the prestage of the Darlington circuit arrangement and said first transistor forming its post-stage;

the base of said third transistor being connected to the collector of said first transistor;

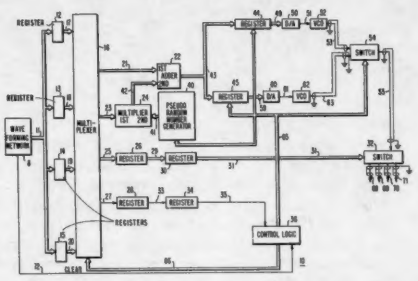
the base of said second transistor being connected to the emitter of said third transistor via said level-shift diode means.

4,286,228

FREQUENCY SPECTRUM NOISE GENERATOR

Carl D. Wise, and Vincent M. Heazel, Jr., both of Severna Park, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1979, Ser. No. 44,792
Int. Cl.³ H03B *29/00*
U.S. Cl. 331—49 **5 Claims**



1. Apparatus for generating noise comprising:

means for generating a noise frequency spectrum represented by a sequence of discrete voltages occurring at predetermined time intervals,

a plurality of voltage controlled oscillators, each having an output,

first means for coupling a first discrete voltage from said sequence of discrete voltages to a first voltage controlled oscillator to provide a first frequency at said output in response to said first discrete voltage during a first time interval,

second means for coupling a second discrete voltage from said sequence of discrete voltages to a second voltage controlled oscillator to provide a second frequency at said output in response to said second discrete voltage during a second time interval,

an outut terminal, and third means for coupling said outputs of said first and second voltage controlled oscillators to said outut terminal.

4,286,229

WAVEGUIDE STRUCTURE FOR SELECTIVELY COUPLING MULTIPLE FREQUENCY OSCILLATORS TO AN OUTPUT PORT

Alfred R. Hislop, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

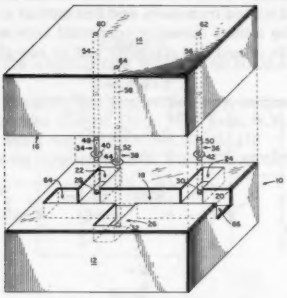
Filed Nov. 26, 1979, Ser. No. 97,454
Int. Cl.³ H03B *9/14*
U.S. Cl. 331—49 **7 Claims**

1. A multiple frequency oscillator comprising:

a waveguide housing having a waveguide cavity therein, said waveguide cavity comprising a main waveguide manifold cavity and n shunt waveguide cavities extending from said main waveguide manifold cavity; and

n oscillators each having a different center frequency of oscillation and each being mounted within one of said n shunt waveguide cavities, each of said oscillators having an on and an off condition and each appearing as a highly reactive impedance when in said off condition, each of said n oscillators being so positioned within its respective

said shunt waveguide cavity such that when each said oscillator is in said off condition, it appears as a substantially open circuit at the center of said main waveguide manifold cavity.

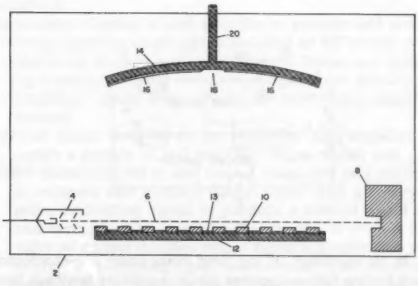


4,286,230

NEAR MILLIMETER WAVE GENERATOR WITH DIELECTRIC CAVITY

Clyde A. Morrison, Wheaton; Donald E. Wortman, Rockville; Richard P. Leavitt, Berwyn Heights, and Nick Karayianis, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 10, 1980, Ser. No. 110,955
Int. Cl.[3] H03B *9/01*
U.S. Cl. 331—79 **8 Claims**



1. Apparatus to generate radiation comprising; means to generate a beam of electrons; a diffraction grating generally adjacent the path of said electron beam; and a reflector means cooperating with said diffraction grating to set up a standing electromagnetic wave pattern through which the electron beam passes; wherein said reflector means comprises substantially only dielectric materials.

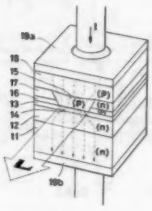
4,286,231

SEMICONDUCTOR LASER DEVICE CAPABLE OF RADIATING A VISIBLE RAY

Yunosuke Makita, Tokyo, Japan, assignor to Agency of Industrial Science & Technology and Ministry of Intl. Trade & Industry, both of Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,124
Claims priority, application Japan, Nov. 28, 1977, 52-141664
Int. Cl.[3] H01S *3/19*
U.S. Cl. 331—94.5 H **2 Claims**

1. In a semiconductor laser device capable of radiating a visible laser beam, comprising: an n-type semiconductor substrate layer; an n-type photon-carriers confining layer lying on the substrate layer; an active layer lying on the n-type confining layer and having an active zone formed by the ion-implantation of nitrogen atoms in the form of stripe extending across the center of the active layer; a p-type photon-carriers confining layer lying on the stripe zone of the active layer; a p-n junction reverse bias layer adjoining the opposite sides of the p-type photon-carriers confining layer; an electrode-connecting layer lying on the p-type confining layer; and a pair of electrodes, one lying on the electrode-connecting layer and the other provided on the lower surface of the substrate layer.

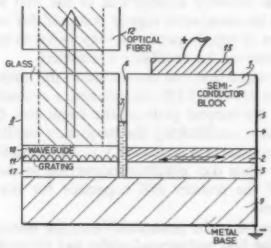


4,286,232

LASER WITH DISTRIBUTED REFLECTOR

Claude Puech; Pierre Leclerc; Baudouin de Cremoux; Pierre Hirtz, and Marie A. Di Forte, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 7, 1979, Ser. No. 46,316
Claims priority, application France, Jun. 9, 1978, 78 17281
Int. Cl.[3] H01S *3/19*
U.S. Cl. 331—94.5 H **9 Claims**

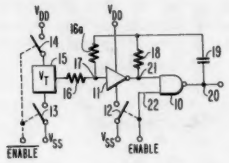


1. A solid state laser source comprising a base, a block of semiconductor material positioned on said base, and a further block of refringent material located on said base in a position contiguous of said block; said block comprising epitaxial layers and electrode means for forward biasing at least one active zone of one of said epitaxial layers, said further block comprising an integrated waveguide sized for collecting at one exit end of said zone the stimulated emission arising from said forward biasing and reflected from a cleaved face of said block; a grating of surface irregularities being engraved in that face of said further block wherein said waveguide is integrated; the uniform pitch of said grating being equal to one wavelength pertaining to the wavelength band of said stimulated emission; the lines of said grating being arranged parallel to said cleaved face for simultaneously providing the biasing feedback along a direction normal to said cleaved face and the light output parallel to said cleaved face.

4,286,233
GATED OSCILLATOR

Nicholas Kucharewski, Lebanon, and James E. Gillberg, N. Plainfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,975
Int. Cl.³ H03K 3/26
U.S. Cl. 331—111 **23 Claims**



15. A selectively disabled or gated oscillator comprising:

first and second LOGIC circuits each having a first input connection for receiving a control signal each having an output and a second input connection and characterized by exhibiting an output signal state complementary to the control signal for the control signal in a first logic state and exhibiting an output signal complementary to the signal at its second input connection for the control signal in a second logic state;

means for connecting the output connections of the first LOGIC circuit to the input connection of the second LOGIC circuit;

a capacitor having a first plate connected to the output connection of the second LOGIC circuit and having a second plate;

means connecting the second plate of the capacitor to the input connection of the first LOGIC circuit;

an INVERTER circuit having first and second nodes for application of respective relatively positive and relatively negative supply potentials thereto, having an input connected to the output connection of the second LOGIC circuit and having an output connection;

switch means between at least one of the first and second nodes and its associative supply potential for interrupting application of supply potential responsive to said control signal whenever the oscillator is disabled;

a resistor having a first end connected to the output connection of the INVERTER circuit and a second end connected to the second plate of the capacitor, the resistor and capacitor establishing the frequency oscillation;

means for generating a potential V_T, substantially equal to the steady state d.c. potential occurring at the interconnection of the resistor and capacitor for the oscillator enabled; and

means for applying the potential V_T to the interconnection of one of the first and second nodes and the switch means.

4,286,234
MULTIVIBRATOR CIRCUIT

Richard W. Denny, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 13, 1979, Ser. No. 12,056
Int. Cl.³ H03K 3/282
U.S. Cl. 331—113 R **3 Claims**

1. A multivibrator circuit comprising

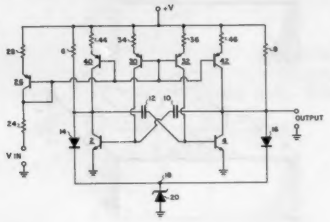
an input circuit,

a first switching transistor having a base electrode and a collector electrode,

a second switching transistor having a base electrode and a collector electrode,

cross-coupling means interconnecting said first and second transistors for forming a flip-flop circuit, said cross-coupling means including a first capacitor connecting said base electrode of said first transistor to said collector electrode of said second transistor and a second capacitor connecting said base electrode of said second transistor to said collector electrode of said first transistor,

a first current source means for the base electrodes of said first and second transistors, said first current source means including a third transistor connected between said base electrode of said first transistor and an energizing source



and a fourth transistor connected between said base electrode of said second transistor and the energizing source,

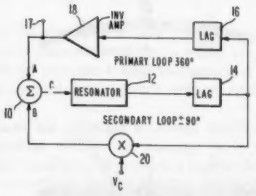
a second current souce means for said collector electrodes of said first and second transistors and,

energizing means connecting said input circuit to said first and second current source means for providing concurrent energization thereof.

4,286,235
VFO HAVING PLURAL FEEDBACK LOOPS

James A. Wilber, and Todd J. Christopher, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,826
Int. Cl.³ H03B 5/36
U.S. Cl. 331—116 R **12 Claims**



1. In an oscillator of the kind comprising a piezoelectric crystal having first and second plates, a primary feedback loop coupled to said crystal for causing output signal oscillations to occur at a desired frequency and a secondary feedback loop coupled to said crystal and including a multiplier for causing variations of said desired frequency in response to a control signal manifestation, the improvement for enhancing spectral purity of the output signal and for suppressing tendencies toward overtone oscillation, said improvement comprising:

a cascade connection of first (**14**) and second (**16**) 90° phase lag networks in said primary feedback loop (**14**, **16**, **18**, **10**) for providing a lowpass transfer characteristic and π radians of phase shift in the primary loop, the first network (**14**) having an input coupled to said second plate of said crystal, the second network (**16**) having an input coupled to an output of the first network and having an output coupled to said first plate of said crystal;

inverter means (**18**) connected in series with said second network between said output of said first network and said first plate of said crystal for imparting an additional π radians of phase shift to said primary feedback loop;

means coupling said output of said first network (**14**) to a first input of said multiplier (**20**) whereby the first one of

said networks in said cascade connection is shared in common with the secondary loop and supplies a quadrature input signal to said multiplier; and

means for deriving said output signal from the output of the second of said networks in said cascade connection.

4,286,236
RF POWER AMPLIFIER WITH A MODULATING FACILITY

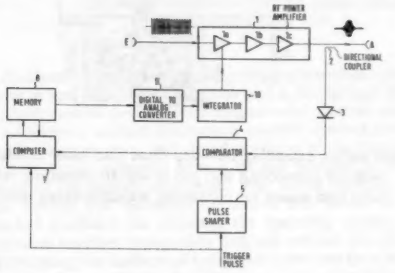
Axel Fischer, Bürstadt, Fed. Rep. of Germany, assignor to International Standard Electric Corp., New York, N.Y.

Filed Aug. 2, 1979, Ser. No. 63,218

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835751

Int. Cl.³ H03K *7/00*

U.S. Cl. 332—10 **7 Claims**



1. An RF power amplifier capable of being modulated by a pulse modulating signal having an arrangement to pre-emphasize said modulating signal so that an RF modulated output signal of said amplifier has a desired shape, said arrangement comprising:

first means coupled to said amplifier to provide said modulating signal for amplitude modulating an RF carrier coupled to an input of said amplifier, said first means including a memory storing therein a predetermined plurality of amplitude values from which said modulating signal is derived;

second means coupled to the output of said amplifier to rectify a portion of said amplifier output signal; and

third means coupled to said second means and said memory to compare said rectified output signal with a reference pulse modulating signal to produce a control signal for said memory, said control signal having at least a first value when said rectified output signal is greater than said reference modulating signal and a second value when said rectified output signal is less than said reference modulating signal, said first and second values altering said stored amplitude values to provide a desired pre-emphasis for said modulating signal.

4,286,237
WIDE RANGE DRIFT COMPENSATED FM SIGNAL GENERATOR

Jack E. James, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 18, 1979, Ser. No. 85,869

Int. Cl.³ H03C *3/06*

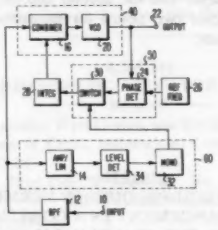
U.S. Cl. 332—19 **11 Claims**

1. An improved FM signal generator comprising a variable frequency oscillator means for producing an output signal having a frequency proportional to the amplitude of a modulating input signal and a drift compensation circuit responsive to a reference frequency signal for regulating the frequency of said oscillator means, the improvement wherein said drift compensation circuit comprises:

keyed phase detector means responsive to a keying signal supplied thereto for comparing the output frequency of said oscillator means with that of said reference signal and producing an error signal;

means for integrating said error signal and applying the resultant integrated error signal as a negative feedback signal to said oscillator means; and

pulse generator means synchronized with said modulating input signal for supplying said keying signal to said keyed phase detector means.



4,286,238
HARMONIC FILTERING DEVICE FOR RADIO TRANSMITTER

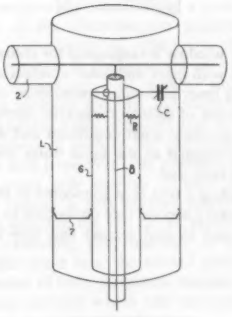
Francois Ursenbach, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 21, 1979, Ser. No. 106,016

Claims priority, application France, Dec. 29, 1978, 78 36958

Int. Cl.³ H01P *1/202, 1/212, 1/22*

U.S. Cl. 333—206 **3 Claims**



1. A harmonic filtering device for a radio transmitter connected to a load by a high frequency line, said device comprising a line section having first and second lines and inserted in said high frequency line and having a first end coupled to said transmitter and a second end for being coupled to said load and n filtering cells (n being a positive integer), said cells arranged in series in said line section when n is greater than 1, wherein at least that one of said cells close to said first end is connected in parallel between said lines on said line section, comprises a circuit made of a resistor connected in series with an inductance and a capacitance connected in parallel, and includes: a coaxial line with a first and a second end, said coaxial line comprising successively, an outer conductor, a first and a second intermediate conductor and an inner conductor, each of these conductors having a first and a second end respectively forming part of the first and second end of said coaxial line; a short circuit and a capacitor each of which being arranged between said outer conductor and said first intermediate conductor to respectively determine said inductance and

said capacitance; an inner load arranged between said first and second intermediate conductors for determining said resistor; and a connection across said second intermediate conductor between the first end of said inner conductor and said first intermediate conductor for determining, with the second end of said inner conductor and the second end of said second intermediate conductor two points for measuring a voltage applied to said resistor.

4,286,239

GAS-TIGHT, HIGH-FREQUENCY PERMEABLE WINDOW ARRANGEMENT IN A COAXIAL LINE, PARTICULARLY FOR TRAVELING WAVE TUBES

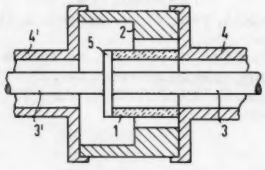
Franz Gross, Loerrach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 109,805

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1979, 2907762

Int. Cl.³ H01P *1/08;* H01J *23/32*

U.S. Cl. 333—245 **5 Claims**



1. A gas-tight window arrangement for connecting an input side coaxial line with inner and outer conductors to an output coaxial line with inner and outer conductors, comprising:

a hollow cylinder of dielectric material surrounding an end portion of the input inner conductor and including a first end face connected to the input outer conductor and a second end face; and

a flange including a first face connected to the output inner conductor and a second face connected to the input inner conductor and to said second end face of said hollow cylinder.

4,286,240

CIRCULAR ELECTRIC MODE MICROWAVE WINDOW

James F. Shively, Los Altos Hills; Steven J. Evans, Mountain View; Howard R. Jory, Menlo Park, and Yosuke M. Mizuhara, Palo Alto, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 3, 1979, Ser. No. 99,768

Int. Cl.³ H01P *1/08, 1/16*

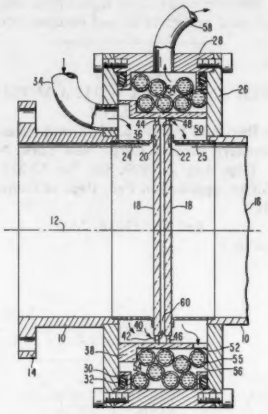
U.S. Cl. 333—252 **4 Claims**

1. A window assembly for waveguide of circular and hollow cross section and having an inner conducting wall in which an axial gap is defined, comprising:

two dielectric plates extending across said section of said waveguide, sealed to said waveguide on opposing sides of said gap;

means for circulating a fluid coolant through said gap and between said plates;

means external to said waveguide for containing waveabsorbing material;



and means extending outward from said inner conducting wall for connecting said gap in wavetransmitting relation with said means for containing waveabsorbing material.

4,286,241

APPARATUS FOR MOUNTING A REED SWITCH

James E. Olivenbaum, Mesa, and Fritz Illgen, Tempe, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 30, 1979, Ser. No. 34,217

Int. Cl.³ H01H *1/66*

U.S. Cl. 335—151 **13 Claims**

1. Apparatus for mounting a reed switch in conjunction with microstrip circuitry having an active plane and a ground plane on a substrate, said apparatus comprising:

(a) an elongated tubularly shaped, electrically conductive member with a longitudinal axis and designed to receive a reed switch axially therein so as to form a substantially coaxial center conductor therethrough, the dimensions of said tubular member being formed to provide an impedance substantially matching the microstrip circuitry;

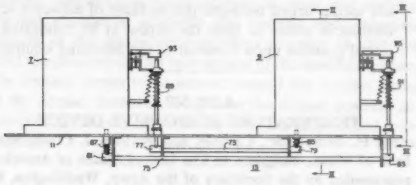
(b) grounding means affixed to said tubular member adjacent each end thereof; and

(c) said substrate defining an opening therethrough for receiving said tubular member therein with the longitudinal axis thereof lying approximately in the active plane of the microstrip circuitry and said grounding means positioned in contact with the ground plane.

4,286,242
MECHANICAL INTERLOCK FOR LOW VOLTAGE CIRCUIT BREAKERS

Stephen A. Mrenna, Brighton Township, Lawrence County; Alfred E. Maier, Chippewa, and Glenn R. Thomas, Brighton Township, Lawrence County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 17, 1979, Ser. No. 75,766
Int. Cl.³ H01H *33/46*
U.S. Cl. 335—160 **4 Claims**

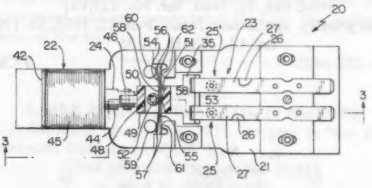


1. An electric control system comprising at least two control devices in spaced adjacent positions and a mechanical interlock, each control device comprising movable contact means and a stationary contact structure, a movable contact carrier movable between open and closed positions of the contacts, operating means releasable from a latched position to effect opening of the contact arm means, trip means operable between latched and unlatched conditions and biased in the unlatched condition for releasing the operating means, the mechanical interlock comprising first and second link means for preventing the contacts of both control devices from being closed simultaneously, the first link means extending between the contact carrier of one control device and the trip means of the other control device, the second line means extending between the contact carrier of the said other control device and the trip means of said one control device, the first link means holding the trip means of said control device in the unlatch condition when the contact carrier of the other control device is in the closed position, and the second link means holding the trip means of said other control device in the latched condition when the movable contact carrier of said one control device is in the open position.

4,286,243
ELECTRICAL SWITCH CONSTRUCTIONS AND METHODS OF MAKING THE SAME

Werner R. Bauer, Radnor, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 1, 1979, Ser. No. 80,573
Int. Cl.³ H01F *7/12*; H01H *3/60*
U.S. Cl. 335—193 **50 Claims**

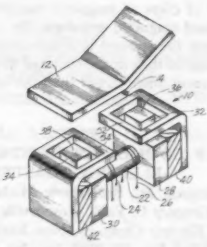


1. In a switch construction having support means carrying switch contact means and an electrical coil means that has an armature means operatively associated with said switch contact means to cause a switching operation therewith when said coil means is energized to attract said armature means from a first position thereof to a second position thereof relative to said coil means, the improvement comprising mechanical spring means operatively associated with said armature means to continuously resist said movement thereof from said first position to said second position with an increasing force that overcomes the increasing pull in force of said energized coil means on said armature means before said armature means reaches its zero gap with said energized coil means whereby said spring means prevents said armature means from reaching its said zero gap and thereby causes said switch construction to be relatively noiseless in the operation thereof.

4,286,244
ELECTROMAGNETIC ACTUATOR FOR A LATCH RELAY

John C. Schuessler, West Covina, and David J. Tapp, Manhattan Beach, both of Calif., assignors to Leach Corporation, Los Angeles, Calif.

Filed Feb. 29, 1980, Ser. No. 126,111
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—230 **8 Claims**



1. A latch relay comprising:

an electromagnet having a pair of spaced pole members, an elongated armature, means pivotally supporting the armature for angular movement about a central axis, the pole members of the electromagnet projecting toward the armature respectively on either side of the pivot axis, whereby rotation of the armature moves one end of the armature toward one pole member and away from the other pole member, and first and second permanent magnets each having a pair of spaced pole members, one of the pole members of each of the permanent magnets being common with respective pole member of the electromagnet, the other pole member of each of the permanent magnets having a first portion projecting toward the armature adjacent the end of the armature and a second portion extending perpendicular to the first portion toward the pivot axis, the second portion of said other pole member of both permanent magnets having an opening therein through which said one pole member of the permanent magnet projects.

4,286,245
MAGNETIC ROTARY FILE

Gloria J. McGannon, 2797 Stevens St., Oceanside, N.Y. 11572

Continuation of Ser. No. 721,055, Sep. 7, 1976, abandoned. This application Jun. 15, 1977, Ser. No. 806,954
Int. Cl.³ G09F *11/04*; H01F *7/02*
U.S. Cl. 335—286 **1 Claim**

1. Rotary magnetic file comprising:

a base having a bottom and two sides,

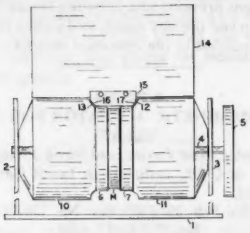
a shaft mounted between said sides,

a magnet mounted on said shaft,

a pair of magnetic members, one mounted on said shaft, at each side of said magnet, the magnet and the magnetic members being rotatable with respect to said sides,

a pair of spacer members, one mounted on said shaft on the outside of each magnetic members, the average diameter of the magnet and magnetic members being less than the diameter of the spacer members,

the edges of the spacer members adjacent to the magnetic members being gradually decreased to the dimension of the magnetic members, and



a plurality of clips of magnetic material mounted on said magnet and magnetic members, the clips being formed to fit between the spacers in a self-centering manner,

the dimension of the clips in the axial direction of the magnet being several times larger than the magnet.

4,286,246

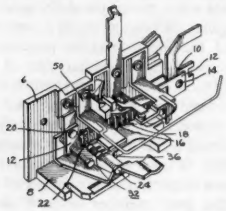
HEAT-UP/COOL-DOWN BIMETAL TIMER FOR ELECTRIC TOASTER

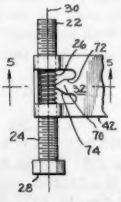
Joseph L. Jacques, Jr., Bethlehem; Michael D. Smith, Allentown, and Gregory C. Yehl, Wescosville, all of Pa., assignors to General Electric Company, New York, N.Y.

Filed Jan. 10, 1980, Ser. No. 110,813

Int. Cl.³ F27D *11/02;* **F16B** *21/02;* **H01H** *43/30*

U.S. Cl. 337—94 **6 Claims**





5. A fastener construction comprising:

(a) rigid body member;

(b) a calibration adjustment screw having a longitudinal axis, a generally cylindrical body portion, an end portion, and a head portion shaped for engagement with calibration equipment for automatically driving the screw to its adjusted position;

(c) a leaf spring fastener for holding the adjustment screw having two end portions, one end portion being connected to the rigid body member and the other end portion being turned on itself in the general shape of a cylindrical sleeve for gripping the outer periphery of the screw threads;

(d) said leaf spring fastener being formed from a piece of generally flat spring metal having two major flat surfaces and edge surfaces, both of the major flat surfaces being in planes generally parallel to the longitudinal axis of the screw so that the direction of movement of equipment for engaging the head of the screw is in a direction toward an edge surface of the fastener so that said fastener will not be deformed when it is being engaged by equipment for adjusting the screw;

(e) said leaf spring fastener including a projection which is arranged generally perpendicular to the longitudinal axis of the screw and being provided with edge surfaces that are spring urged between the surfaces of adjacent screw threads in order to hold the screw in its calibrated adjusted position upon removal of the adjusting equipment.

4,286,247

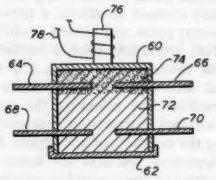
TEMPERATURE RESPONSIVE DEVICE

George H. Bishop, Jr., Carlisle, and William J. Croft, Natick, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 15, 1979, Ser. No. 84,965

Int. Cl.³ H01H *37/76*

U.S. Cl. 337—402 **5 Claims**



1. A resettable temperature responsive device comprising:

a container;

a meltable body partially filling said container;

activating means for translating through said container under the influence of gravity upon the melting of said meltable body;

terminal means for providing electrical connections which can be electrically opened and closed upon movement of said activating means; and

means for electro-magnetically resetting said device after said meltable body has melted.

4,286,248

THERMAL CUT-OFF FUSE

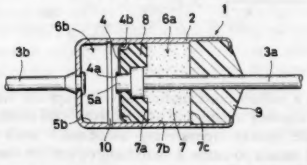
Kunio Hara, Kawasaki, Japan, assignor to Nifco Inc., Kanagawa, Japan

Filed Feb. 21, 1980, Ser. No. 123,131

Claims priority, application Japan, Feb. 22, 1979, 54/19003

Int. Cl.³ H01H *37/76*

U.S. Cl. 337—403 **5 Claims**



1. A thermal cut-off fuse for breaking electric continuity between first and second lead wires at a prescribed temperature, which comprises a housing, an electrically conductive contact means contained movably within the hollow space of

said housing from the first to the second position, allowed while at the said first position to remain in contact with first and second terminal portions electrically connected within said housing respectively with said first and second lead wires and, while at the second position, to be separated from at least one of the two terminal portions, and a temperature-sensitive member sealed in a space within the housing on the side of the first position of said contact means, with the surface of said member opposed to the contact means, said member being adapted to remain solid under normal conditions and at the prescribed temperature being adapted to melt and undergo voluminal expansion, whereby the melting and voluminal expansion of the temperature-sensitive member at said prescribed temperature causes said surface of the member opposed to the contact means to be moved toward the contact means until the contact means is brought to the second position and the electric continuity between the first and second lead wires is broken.

4,286,249

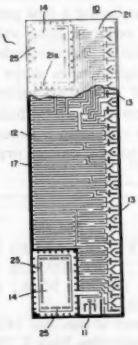
ATTACHMENT OF LEADS TO PRECISION RESISTORS

Kenneth R. Lewis, Broomall, and Anthony C. Meenan, West Chester, both of Pa., assignors to Vishay Intertechnology, Inc., Malvern, Pa.

Continuation of Ser. No. 892,122, Mar. 31, 1978. This application Dec. 13, 1979, Ser. No. 103,549

Int. Cl.³ H01C *1/034*

U.S. Cl. 338—275 **25 Claims**



1. In a precision resistor which includes a thin resistance foil cemented to a much thicker rigid substrate, and a resistive path between terminal pads defined in the cemented foil, the improvement comprising:

at least one aperture located within the confines of each cemented pad and penetrating through the entire thickness of the foil.

4,286,250

LASER FORMED RESISTOR ELEMENTS

Peter J. Sacchetti, Manchester, N.H., assignor to New England Instrument Company, Natick, Mass.

Filed May 4, 1979, Ser. No. 36,811

Int. Cl.³ H01C *1/012*

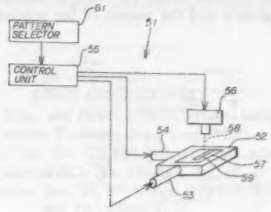
U.S. Cl. 338—306 **22 Claims**

1. An electrical component comprising:

an insulator substrate portion of a homogeneous organic body element and a carburized conductive resistor portion means formed from said homogeneous organic body element;

a first electrical conductor electrically connected to one location on said resistor portion means so as to form one terminal for connection to an electrical circuit; and

a second electrical conductor electrically connected to said resistor portion means at a different location spaced from



said one location so as to form another terminal for connection to an electrical circuit.

4,286,251

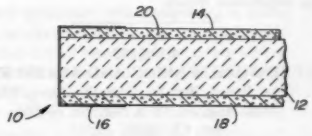
VITREOUS ENAMEL RESISTOR AND METHOD OF MAKING THE SAME

Robert G. Howell, Boone, N.C., assignor to TRW, Inc., Cleveland, Ohio

Filed Mar. 5, 1979, Ser. No. 17,262

Int. Cl.³ H01C *1/012*

U.S. Cl. 338—309 **28 Claims**



1. A method of making an electrical resistor comprising the steps of

(a) coating the surface of an insulating substrate with a mixture of a glass frit and particles of a metal oxide selected from the group consisting of iridium oxide, ruthenium oxide, and mixtures thereof,

(b) firing the mixture in an atmosphere and at a temperature to provide a controlled degree of dissociation of the oxide particles, and then

(c) cooling the coated substrate to form a resistor film of glass having conductive particles dispersed therethrough and characterized by being terminable by an electroless plated metal film.

4,286,252

ACCELERATION RESPONSIVE MONITOR

Alistair D. M. Sligh, Edinburgh, and Brian E. Pitches, Lothian, both of Scotland, assignors to Ferranti Limited, Cheadle, England

Filed Nov. 14, 1979, Ser. No. 94,167

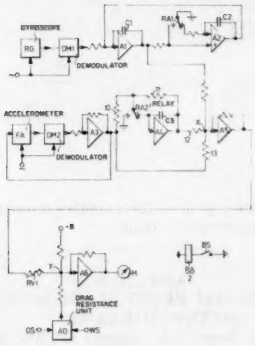
Claims priority, application United Kingdom, Nov. 14, 1978, 44487/78

Int. Cl.³ G01C *23/00*

U.S. Cl. 340—27 SS **7 Claims**

1. Apparatus for monitoring the acceleration of an aircraft moving on the ground, which includes a linear accelerometer rigidly secured to the aircraft with its sensitive axis along a fore-and-aft axis of the aircraft and, nominally horizontal, first circuit means operable to null the output of the accelerometer while the aircraft is at rest and including a first amplifier responsive to the output of the accelerometer to develop a first current and a second amplifier operable when the aircraft is at rest to develop a second current equal and opposite to the first current, a gyroscope operable to determine the attitude of the sensitive axis of the accelerometer relative to a horizontal

plane, second circuit means responsive to the output of the gyroscope and operable to correct said output for pitch movements of the aircraft while the aircraft is moving on the ground, summation means operable to combine the first and second currents and the output of the second circuit means,



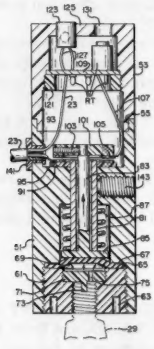
correction means operable to reduce the output of the summation means by an amount dependent upon the aerodynamic drag resistance of the aircraft at any instant, and indication means operable to provide an indication of the corrected output of the summation means.

4,286,253

TIRE PRESSURE SENSING AND ALARM SYSTEM

Emery J. Nagy, Rte. 1, Box 86, Yoncalla, Oreg. 97499

Filed Aug. 24, 1979, Ser. No. 69,564
Int. Cl.[3] B60C *23/02*
U.S. Cl. 340—58 **3 Claims**



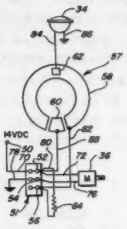
1. A tire pressure sensor comprising:
a body,
means for mounting the body on the valve stem of a tire,
a pressure sensing piston mounted in said body to react to the pressure of the tire,
alarm switch means to be actuated by the piston,
mounting means mounting said switch means in various positions of adjustment relative to said body to adapt said switch means to be actuated at different levels of piston movement, said mounting means includes a sleeve through which said piston extends,
means mounting said sleeve for sliding movement in said body,
and means for releasably fixing the position of said sleeve and being accessible from the exterior of said body.

4,286,254

ROTATING SIGNAL LIGHT WITH VARIABLE VOLTAGE LAMP CIRCUIT

Earl W. Gosswiller, Clarendon Hills, Ill., assignor to Federal Signal Corporation, Oak Brook, Ill.

Filed Dec. 5, 1979, Ser. No. 100,503
Int. Cl.[3] B60Q *1/46*; H02P *5/08*
U.S. Cl. 340—84 **6 Claims**



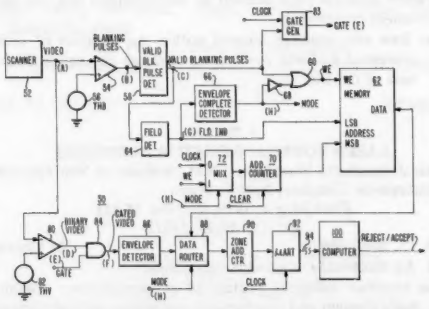
1. A rotatable signal light assembly for use on emergency vehicles comprising, in combination, a lamp mounted for rotation about a generally upright axis for producing light flashes in a plurality of generally radial directions during each 360 degree lamp revolution, drive means for rotating said lamp at a substantially uniform rate of speed, and voltage control means operative during each said revolution to provide increased lamp voltage during a first predetermined portion of said revolution and reduced lamp voltage during a second predetermined portion of said revolution, thereby to produce increased intensity light flashes when said lamp is aimed in predetermined radial directions corresponding to said first predetermined portion of said revolution and light flashes of lesser intensity when said lamp is aimed in other radial directions corresponding to said second predetermined portion of said revolution.

4,286,255

SIGNATURE VERIFICATION METHOD AND APPARATUS

Pepe Siy, Dearborn Heights, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 14,023, Feb. 22, 1979, abandoned. This application May 2, 1980, Ser. No. 146,134
Int. Cl.[3] G06K *9/52*
U.S. Cl. 340—146.3 SY **9 Claims**



1. Apparatus for use in signature verification by comparing features of a signature to be validated against features of a signature standard recorded in binary form, comprising:
scanning means for scanning a document bearing a signature to be validated, said scanning means providing a first

plurality of signals representative of the reflectivity of the signature and the document;

first means coupled to receive said first plurality of signals and, in response to said signals, generate mode signals, write enable signals, and field indicator signals;

second means coupled to receive said first plurality of signals and extract a plurality of digital signals representing the electrical values of an envelope formed by a reference line founding the lower part of a signature and a line founding the upper part of the signature where the scanning means scans across the lines of the envelope; and

a data router coupled responsive to a first set of said mode signals to direct said digital signals for recording in a memory device;

said data router responding to a second set of said mode signals to direct digital signals recorded in said memory device to a computer for comparison against features of a standard signature recorded therein.

4,286,256

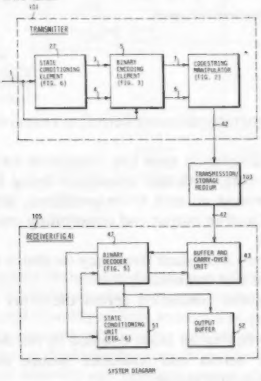
METHOD AND MEANS FOR ARITHMETIC CODING UTILIZING A REDUCED NUMBER OF OPERATIONS

Glen G. Langdon, Jr., San Jose, and Jorma J. Rissanen, Los Gatos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1979, Ser. No. 98,285

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **11 Claims**



1. In an apparatus for generating an instantaneous FIFO binary arithmetic code string C(sb) recursively formed by the high-to-low order pairwise combining of digits of a decodable set of relatively shifted finite binary number strings C(s), A(sb) responsive to each binary symbol b in the symbol string s; q of the lowest order bits of each string being combined during each recursion, wherein the improvement comprises:

a first (**201** FIG. 7) and second (**17** FIG. 3) register means for storing respectively at least q of the lowest order bits of C(s) and a number string T(s);

first means (**2,3** FIG. **2**; FIG. **6**) responsive to each applied symbol b for obtaining an integer valued parameter k indicative of its relative frequency;

second means (FIG. **3**) responsive to each symbol b and parameter k for forming A(sb), T(sb) such that:

$$T(sb) \text{ or } A(sb) = T(s)[1-2^{-k}]$$

third means (**3,39,31,24**) for forming a code string shift amount (**SA**) either of magnitude k when b is a first-bit value (b(**1**)=1) or of a second magnitude according to the value in a designated bit position (msb) in the second register; and

fourth means (**6,7,203,205,207**) responsive to the shift amount and A(sb) for combining A(sb) with C(s) in the first register (**201**) to form C(sb) and for left shifting (**6,205**) the first register contents according to the shift amount.

4,286,257

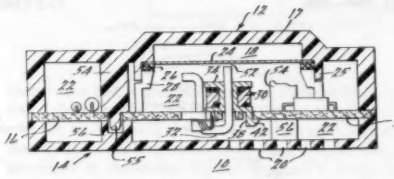
TONE GENERATOR

Michael Slavin, Troy, and Juhan Telmet, Fraser, both of Mich., assignors to Lectron Products, Inc., Troy, Mich.

Continuation of Ser. No. 928,447, Jul. 27, 1978, abandoned, which is a division of Ser. No. 814,417, Jul. 11, 1977. This application Dec. 19, 1979, Ser. No. 105,383

Int. Cl.³ G08B *3/10*

U.S. Cl. 340—388 **25 Claims**



1. A sound generator unit comprising a casing housing a diaphragm, an electromagnetic coil for causing said diaphragm to vibrate, and circuit means for energizing said coil; said unit being characterized by said casing having a recessed area formed therein, said diaphragm being placed over said recessed area so as to define a closed sound cavity within said recessed area, and retaining means for securing said diaphragm in position over said recessed area including a resilient element disposed about the periphery of said diaphragm and a retaining element for securing said resilient element against said diaphragm, said retaining means creating a seal at the periphery of said closed sound cavity which permits relatively slow air leaks to pass into and out of said closed sound cavity to allow the steady-state pressure differential across said diaphragm to equalize, but which appears substantially as a tight air seal around the periphery of said closed sound cavity relative to the rapid air movements within said closed sound cavity caused by the vibration of said diaphragm.

4,286,258

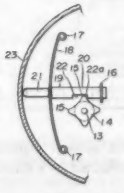
MOTOR ACTUATED BELL

Tadashi Ishii, c/o Kobishi Electric Co., Ltd. No. 4–6, Kaminakazato 3-Chome, Kita-Ku, Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,737

Int. Cl.³ G10K *1/064;* G08B *3/10*

U.S. Cl. 340—396 **8 Claims**



1. A motor actuated bell which comprises:

(a) a base;

(b) a motor mounted on said base and having a rotatable drive shaft;

(c) a gong mounted on said base;

(d) a hammer for striking against said gong;

(f) an elongated resilient means for urging said hammer into striking contact with said gong, said resilient means mounted on said base, and said hammer being supported on the central portion of said elongated resilient means; and

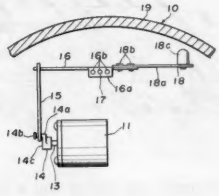
(g) a cam means connected to the motor drive shaft and acting on said hammer to intermittently urge the same away from said gong against the bias of said resilient means.

4,286,259

ELECTRICALLY OPERATED BELL

Tadashi Ishii, Tokyo, Japan, assignor to Kobishi Electric Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,605
Int. Cl.³ G10K *1/064;* G08B *3/10*
U.S. Cl. 340—396 **5 Claims**



1. An electrically operated bell which comprises:

(a) a base;

(b) a gong mounted on said base;

(c) an electric drive means mounted on said base;

(d) a hammer means for striking against said gong; and

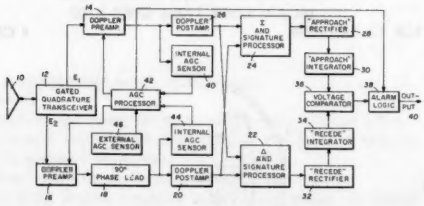
(e) a lever pivotally mounted on said base and supporting said hammer means, said lever being operatively connected to said drive means for intermittently moving said hammer means into striking contact with said gong, and said lever having a pivot adjusting means by which the fulcrum of said pivotal lever can be varied.

4,286,260

RANGING QUADRATURE DOPPLER MICROWAVE INTRUSION ALARM SYSTEM

David N. Gershberg, Rockville, Md.; Alexander Y. Lee, Jr., Arlington, and William B. Moore, Falls Church, both of Va., assignors to E-Systems, Inc., Dallas, Tex.

Filed Sep. 11, 1979, Ser. No. 74,502
Int. Cl.³ G08B *13/18*
U.S. Cl. 340—554 **19 Claims**



1. A ranging intrusion alarm system utilizing microwave energy transmitted from and reflected to a monostatic antenna comprising:

a transceiver for coupling energy to the antenna and receiving energy reflections therefrom to generate a Doppler frequency signal, said transceiver including:

a transmit/receive mixer coupled at one terminal to the antenna and having a receive output terminal and an RF input terminal,

an oscillator generating an RF frequency as the transmit frequency,

an RF switch for periodically coupling the RF frequency of said oscillator to the RF input terminal of said mixer, and

means for driving said switch at a rate to produce a transmitted pulse length equal to the out and back propagation time to an object at a selected alarm range,

circuit means responsive to the Doppler frequency signal to generate a time varying signal, and

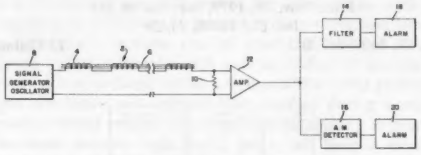
alarm means actuated by a signal from said circuit means.

4,286,261

APPARATUS FOR DISCRIMINATING BETWEEN STRAIN AND MAGNETIC STIMULI IN MAGNETIC CORED SOLENOID TYPE TRANSDUCER LINE SENSORS

Gilbert F. Wagner, Vienna, and J. Louis Berger, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 1, 1978, Ser. No. 939,027
Int. Cl.³ G08B *13/02, 13/22*
U.S. Cl. 340—565 **4 Claims**



1. A duel signature perimeter detection system comprising in combination:

an elongated solenoid type line transducer having a ferromagnetic core, with said transducer being buried in the ground around an area to be protected, and having an input end and an output end constituting one end and an other end;

means to apply a constant frequency oscillator signal across one end of said transducer;

resistance means connected across the other end of said transducer;

an amplifier having an input coupled to the output of said transducer across said resistance means, said amplifier having an output means;

low frequency characteristic of magnetic signature responsive first detection means coupled to said output means of said amplifier for detecting signals produced by said transducer in response to a magnetic stimulus; and

oscillator signal modulated by transducer inductive change responsive second detection means coupled to said output means of said amplifier for detecting signals produced by said transducer in response to a strain stimulus;

said first and second detection means being concurrently operative to indicate perimeter intrusion.

4,286,262

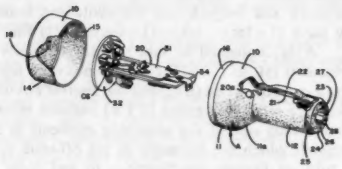
ELECTRONIC TRANSMITTER DEVICE

John F. Wahl, Sterling, Ill., assignor to Mallard Manufacturing Corporation, Sterling, Ill.

Filed Sep. 2, 1975, Ser. No. 609,388
Int. Cl.³ H04B *7/00*
U.S. Cl. 340—694 **18 Claims**

1. In a system for opening a garage door which includes a radio receiver responsive to a selected radio frequency, means actuated by said receiver for opening said door, and means for transmitting a radio signal of said frequency, the improvement in which said transmitting means includes a socket, a casing having a portion thereof which is insertable into said socket, a

transmitter contained within said casing and tuned to said frequency, and means automatically operable when said portion is inserted to a predetermined position within said socket for energizing said transmitter.

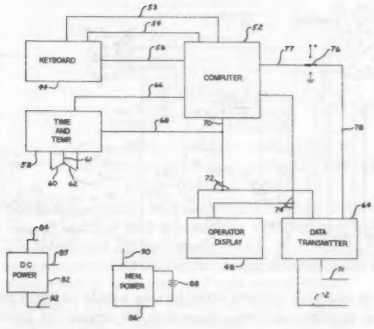


4,286,263

ILLUMINATED CHANGEABLE-DISPLAY SIGN

Allan W. Lindberg, 464 N. Taylor Ave., St. Louis, Mo. 63122

Filed Aug. 16, 1979, Ser. No. 67,174
Int. Cl.³ G08B *5/36*
U.S. Cl. 340—717 **13 Claims**



1. An illuminated changeable-display sign which comprises a first plurality of light sources that are located for general viewing, a second plurality of light sources that are located for viewing by the operator of said sign, said second plurality of light sources being displaceable away from said first plurality of light sources whereby said operator cannot simultaneously view said first plurality of light sources and said second plurality of light sources, said light sources of said first plurality of light sources and said light sources of said second plurality of light sources being similarly arranged in rows and columns, a plurality of shift registers for said first plurality of light sources whereby each row of light sources of said first plurality of light sources has its own shift register, a further shift register which is usable for all of the light sources of said second plurality of light sources, and a multiplexing circuit which recurrently steps into said further shift register data that corresponds to the various rows of said second plurality of light sources and thereupon, for short periods of time, uses said data to appropriately illumine or darken the light sources in said various rows of said second plurality of light sources.

4,286,264

SIGNAL GENERATOR FOR A GRAPHIC CONSOLE

Philippe Matherat, Paris, France, assignor to Thomson-CSF, Paris, France

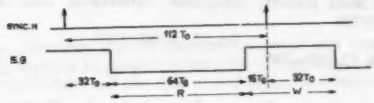
Filed May 16, 1979, Ser. No. 39,261
Claims priority, application France, May 18, 1978, 78 14764
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—744 **10 Claims**

1. A signal generator for displaying on the CRT screen of a TV set the data of a graphic image stored in a refresh memory unit, characterised in that said signal generator comprises:

counting means, incremented by a clock signal at the dot frequency of the image to be displayed, said counting means comprising a horizontal counter, functionally linked to/a vertical counter, for providing read memory address signals;

means for modifying the format of the TV image displayed comprising a half-line flip-flop and a frame parity flip-flop;

means for recognising the state of the said counting means comprising: means for clearing the horizontal counter at the beginning of each scan line forming the graphic image, means for clearing the vertical counter at the beginning of each frame of the graphic image, and means for forming line signals, frame signals and test signals for said image;



means for multiplexing the memory address signals generated by said counting means comprising a first multiplexer governed by the format desired for the TV image, a second multiplexer governed by the reading and writing periods associated with said memory unit and a third multiplexer for multiplexing the high and low parts of the memory address signals;

means for controlling the luminance of the graphic image;

means for generating line synchronising pulses and frame synchronising pulses, for said TV image and

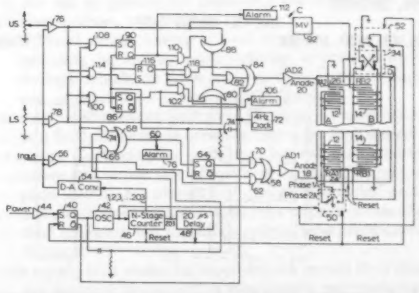
means for controlling a graphic unit.

4,286,265

BAR GRAPH DISPLAY PANEL AND SYSTEM FOR DISPLAYING ANALOG VALUES THEREIN

Samuel L. Kauffman, Sunnyvale, Calif., and John O. Morin, Madison, Conn., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 849,555, Nov. 8, 1977, abandoned, which is a division of Ser. No. 574,446, May 5, 1975, Pat. No. 4,163,971. This application Mar. 15, 1979, Ser. No. 20,885
Int. Cl.³ G01D *7/00*; H01J *17/48*
U.S. Cl. 340—754 **4 Claims**



1. A display panel for displaying bars of light comprising

a gas-filled envelope containing a series of linear display cathode elements adapted to be viewed,

said series having a first end defined by the first display cathode and a second end defined by the last display cathode,

two reset cathodes, one positioned adjacent to the first display cathode at said first end of said series and the other positioned adjacent to the last display cathode at the

second end of said series, said reset cathodes being adapted to provide excited particles for said first and last cathodes for use in initiating scanning cycles of said series of cathodes at said first and last cathodes separately,

a keep-alive cell adjacent to each reset cathode, and

an anode electrode means in operative relation with said series of cathodes.

4,286,266

DISPLAY DEVICE

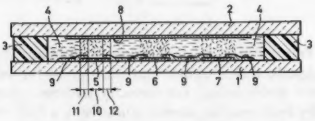
Maarten De Zwart, and Johannes L. A. M. Heldens, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1978, Ser. No. 968,958

Claims priority, application Netherlands, Jan. 18, 1978, 7800584

Int. Cl.³ G08B *5/36*

U.S. Cl. 340—765 **3 Claims**



1. A display device comprising at least two supporting plates; a plurality of control electrodes formed in a pattern on at least one of said supporting plates, said control electrodes being individually energized, a counter electrode formed on the other of said supporting plates; a layer of liquid crystal disposed between said supporting plates and in direct contact with said electrodes; a semi-permanent visible disturbance being induced in said liquid crystal by means of direct voltage and being erased by means of alternating voltage; and insulating means for covering at least the edges of said control electrodes said remaining surfaces of said electrodes remaining in direct contact with said liquid crystal.

4,286,267

DIRECTIONAL ANTENNA SYSTEM WITH ELECTRONICALLY CONTROLLABLE SWEEP OF THE BEAM DIRECTION

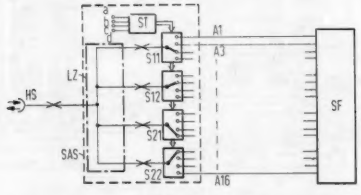
Theodor Schwierz, Klingen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,308

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813916

Int. Cl.³ H04B *7/00*

U.S. Cl. 343—100 SA **7 Claims**



1. A directional antenna system with electronically controllable beam sweep consisting of a radiator arrangement oriented toward a reflector and of a switching and control installation associated with the radiator arrangement, characterized in that the radiator arrangement consists of n×m (whole positive numbers for n and m) radiator elements (**1, 2 . . . 16**) arranged matrix-like oriented toward said reflector, and in this radiator field (SF), radiator groups of respectively k×l (whole positive numbers for k and l) with matrix-like arranged radiator elements are activatable with (n−k+1)×(m−l+1) elements, a line branching (LZ) is provided which divides or, respectively, sums up the total energy substantially without loss in k×branches with nearly equal portions of energy and the branches are formed into star-shaped switching branches Sij (**S11, S12, S21, S22**)—for 1=i=k and 1=j=l, and the switching branches respectively have (1+Int.n−i/k)×(1+Int.m−j/1) line legs (**A1, A2 . . . A16**) connected to said radiator elements and switching elements (**s1, s2 . . . s16**) inserted into each leg and actuatable by a control circuit (ST), and the control circuit for the activation of a selectable group of k×l radiator elements always switches only one of the switching elements in each switching branch which are normally in the off-state to the on-state to turn on various combinations to and from said radiator elements to control the directivity of said reflector.

4,286,268

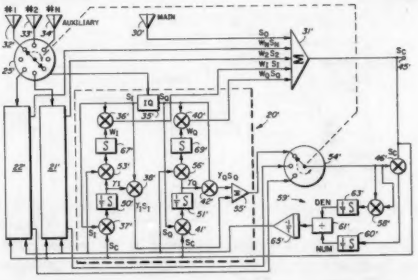
ADAPTIVE ARRAY WITH OPTIMAL SEQUENTIAL GRADIENT CONTROL

Sam M. Daniel, Tempe, and Michael H. Myers, Scottsdale, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Apr. 13, 1979, Ser. No. 29,805

Int. Cl.³ H04B *1/10*

U.S. Cl. 343—100 LE **7 Claims**



1. In an adaptive antenna array having a main antenna and at least one auxiliary antenna, apparatus for sequential gradient control comprising:

(a) a plurality of weight channels for adjusting the weight of signals from the auxiliary antenna to reduce side lobe interference;

(b) circuit means for adjusting the gain of each channel for gradient control of the weight;

(c) switching means connected to said weight channels and said circuit means for periodically connecting said circuit means to each of said weight channels; and

(d) each of said weight channels including memory means for continued gradient control during periods that said circuit means is connected to other weight channels.

4,286,269

Patent Not Issued For This Number

4,286,270

DOUBLE-CHANNEL SATELLITE NAVIGATION SYSTEM

Alex A. Veselkov, ulitsa Zastavnaya, 13; Ivan F. Glumov, ulitsa Kotovskogo, 13, kv. 59; Leonid A. Zlotnikov, ulitsa Polevaya, 24, kv. 37; Viktor P. Maiko, ulitsa Pionerskaya, 6, kv. 5, all of Gelendzhik, and Jury F. Matusevich, ulitsa Yankovskogo, 102, kv. 21, Krasnodar, all of U.S.S.R.

Filed May 7, 1979, Ser. No. 36,341

Int. Cl.³ G01S *5/02*

U.S. Cl. 343—113 DE **2 Claims**

1. A double-channel satellite navigation system whereof

outputs are electrically connected to a computer, each of its two channels comprising:

a mixer having a first input intended to receive one frequency component of a double-frequency signal transmitted by the navigation satellite, a second input and an output;

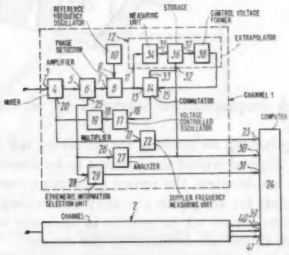
an amplifier having a first input, a second input and an output, said first input of said amplifier being connected to said output of said mixer;

a phase detector having a first input, a second input and an output, said first input of said phase detector being connected to said output of said amplifier;

a reference frequency oscillator having an output connected to said second input of said phase detector;

an extrapolator having a first input, a second input and an output, said first input of said extrapolator being connected to said output of said phase detector;

a commutator having a first input, a second input, a third input and an output, said first input of said commutator



being connected to said output of said phase detector, said second input of said commutator being connected to said output of said extrapolator;

a voltage-controlled oscillator having an output and an input connected to said output of said commutator;

a frequency multiplier having an input connected to said output of said voltage-controlled oscillator, and an output connected to said second input of said mixer;

a Doppler frequency measuring unit having an input connected to said output of said frequency multiplier, and an output which serves as an output of the channel;

a signal level analyzer having an input connected to said output of said amplifier, and an output connected to said second input of said extrapolator and to said third input of said commutator and serving as an output of the channel;

an ephemeris information selection unit having an input connected to said output of said amplifier, and an output which serves as an output of the channel.

4,286,271

LOG-PERIODIC MONOPOLE ANTENNA

Normand Barbano, Sunnyvale, and Samuel C. Kuo, Saratoga, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

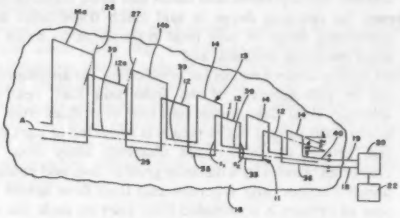
Filed Feb. 26, 1979, Ser. No. 15,493
Int. Cl.³ H01A *11/10*
U.S. Cl. 343—792.5 **14 Claims**

1. A balanced-fed log-periodic vertically polarized monopole antenna comprising

first and second angularly spaced arrays proximately spaced from and on the same side of an electrically conductive ground plane,

each of said arrays comprising a plurality of longitudinally spaced radiating elements and interelement connector lines connecting said elements in series, said elements of each array extending in a direction away from and in a plane normal to said ground plane, each of said elements being open at the inner end proximate to the ground plane and closed at the outer end remote from the ground plane,

the elements of each of said arrays having dimensions which progressively increase from one end to the other in progressive increments of a predetermined ratio,



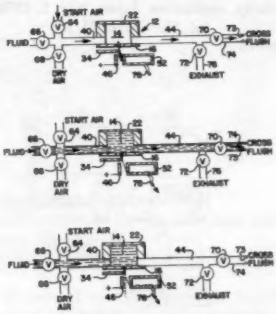
the space between adjacent elements of one of said arrays being opposite an element of the other of said arrays, and means to connect said one ends of said arrays to a balanced feed source.

4,286,272

INK JET PRINTER AND START UP METHOD THEREFOR

Charles J. Schwob, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 13, 1979, Ser. No. 65,786
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **12 Claims**



1. An ink jet printer for depositing ink drops on a print receiving medium, comprising:

print head means having a fluid receiving reservoir and including an orifice plate defining a row of orifices through which ink from said reservoir passes to form a row of downward extending fluid filaments,

means for stimulating said fluid filaments to cause each of said fluid filaments to break up into a jet drop stream,

a charge electrode plate positioned beneath said print head means and to one side of said row of fluid filaments, said plate including a plurality of charge electrodes, each of said electrodes positioned adjacent a respective one of said fluid filaments and spaced therefrom by a predetermined distance,

ink supply inlet means for supplying ink to said fluid receiving reservoir in a direction substantially perpendicular to said row of orifices and to said fluid filaments, said ink supply inlet means being positioned on the same side of said fluid filaments as said charge electrode plate,

ink supply outlet means for removing ink from said fluid receiving reservoir in a direction substantially perpendicular to said row of orifices and to said fluid filaments, said ink supply outlet means being positioned on the side of said fluid filaments opposite said ink supply inlet means,

means for selectively applying charging potentials to said

plurality of charge electrodes such that drops in said jet drop streams are selectively charged,

means for providing a drop deflection field through which said jet drop streams pass, such that drops in said jet drop streams are separated into catch and print trajectories,

means for catching drops in said catch trajectories while permitting drops in said print trajectories to strike said print receiving medium, and

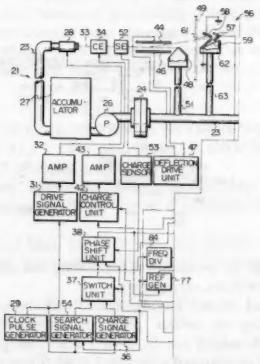
fluid supply control means for controlling the application of ink to and removal of ink from said fluid reservoir, whereby fluid flow across said row of orifices from said inlet means to said outlet means is provided at start up of said printer to deflect said filaments away from said charge electrodes by a distance greater than said predetermined distance, and whereby said fluid flow across said row of orifices is terminated after start up such that said fluid filaments are thereafter spaced from said electrodes by said predetermined distance, said fluid supply control means including means for providing a sufficient back pressure within said fluid receiving reservoir during flow from said inlet means to said outlet means at start up to produce fluid flow through said orifices and formation of said fluid filaments.

4,286,273

DEFLECTION COMPENSATED INK EJECTED PRINTING APPARATUS

Masanori Horike, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,915
Claims priority, application Japan, Nov. 2, 1978, 53-135427
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—75 **18 Claims**



1. An ink ejection apparatus including ink ejection means for ejecting and charging ink and deflecting the ink from an ejection axis in a direction in response to a deflection signal, characterized by comprising:

target means spaced from the ejection axis in said direction;

hit sensor means for sensing impingement of the ink on the target means and producing a hit signal in response thereto; and

deflection sweep means for controlling the ink ejection means to sweepingly vary deflection of the ink until the hit sensor means produces the hit signal;

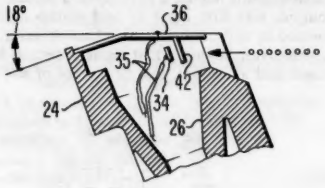
the ink ejection means comprising nozzle means for ejecting ink in response to ejection pulses, charging means for charging the ink in response to charging pulses, charge sensor means for sensing when the ink has a predetermined charge and producing a phase set signal in response thereto and phase sweep means for sweepingly varying a phase between the ejection pulses and the charging pulses until the charge sensor means produces the phase set signal, the deflection sweep means and the phase sweep means being independent of each other.

4,286,274

INK DROPLET CATCHER ASSEMBLY

Ronald G. Shell, Birmingham; Wallace F. Brownell, Northville, both of Mich.; Richard C. Fedder, and Kyriakos Christou, both of Longwood, Fla., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 6, 1980, Ser. No. 127,921
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—75 **9 Claims**



1. An ink droplet catcher assembly for an ink jet printer comprising:

a housing having an opening for receiving ink droplets;

a sensor, aligned within the housing to be directly impacted by the ink droplets, the sensor generating varying electrical signals for supply to circuitry controlling ink droplet deflection for an ink jet printer in response to the impact position of the ink droplets on the sensor;

a coating on the sensor to retard sensor wear and to prevent short circuiting of the generated electrical signals in response to ink droplet impacts;

means, within the housing, for limiting the size of objects which contact the sensor;

means for conducting the ink droplets out of the housing to a reservoir; and

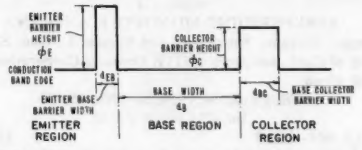
a lid, covering the housing, to deflect air and ink droplets into the means for conducting the ink droplets out of the housing.

4,286,275

SEMICONDUCTOR DEVICE

Mordehai Heiblum, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,251
Int. Cl.[3] H01G *29/88*
U.S. Cl. 357—12 **8 Claims**



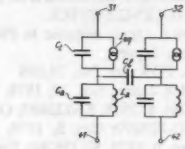
1. A semiconductor device comprising in combination a base region with a physical dimension of the order of the mean-free path of a majority carrier, an emitter region forming a first barrier of a first height with said base region and having a barrier width of the order to permit quantum mechanical tunneling;

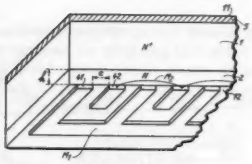
a collector region forming a barrier with said base region lower than said first barrier and having a barrier width sufficient to inhibit quantum mechanical tunneling and an ohmic contact to each said emitter, said base and said collector regions.

4,286,276
DUAL SCHOTTKY CONTACT AVALANCHE SEMICONDUCTOR STRUCTURE WITH ELECTRODE SPACING EQUAL TO EPI LAYER THICKNESS

Felix Diamand, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 19, 1979, Ser. No. 21,767
Claims priority, application France, Mar. 21, 1978, 78 08144
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **7 Claims**



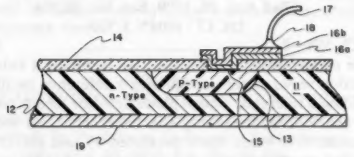


1. A semiconductor structure based on the avalanche phenomenon, comprising a semiconductor substrate of a predetermined conductivity type, at least one layer of semiconductor material of the same conductivity type doped with a lower density of doping impurities than the substrate, forming the active region of the avalanche structure, having a thickness in the range of 10^{-6} meter to several 10^{-6} meters, and at least one first Schottky contact on the external surface of said layer, the structure further comprising, in the vicinity of said first Schottky contact, a second Schottky contact, the distance between said first and said second Schottky contacts being substantially equal to the thickness of the active region.

4,286,277
PLANAR INDIUM ANTIMONIDE DIODE ARRAY AND METHOD OF MANUFACTURE

Randolph E. Longshore, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1977, Ser. No. 854,435
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **6 Claims**

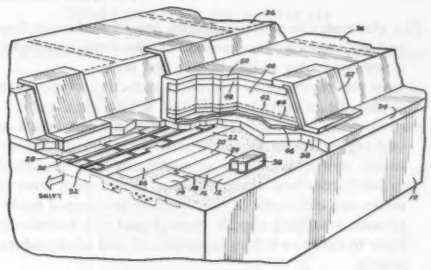


1. A photodiode comprising:
a wafer of n-type indium antimonide doped with telluride having a carrier concentration of 2×10^{15} and a mobility between 1.5 and 2 times 10^5; said wafer having a planar surface;
isolated pockets of p-type material imbedded in said wafer having exposed contact surface areas coplanar with said planar surface;
a layer of silicon oxide covering said planar surface and contact surface except for a small percentage of said contact surface; and
a separate electrode at each pocket covering and contacting said small percentage of contact surface and at least a continuous narrow strip of said silicon oxide surrounding said small percentage of contact surface, wherein each electrode comprises: a thin layer of a noble metal covering only said small percentage of contact surface area, a layer of chromium covering said noble metal and some of the surrounding silicon oxide, and a layer of gold covering said chromium.

4,286,278
HYBRID MOSAIC IR/CCD FOCAL PLANE

Robert V. Lorenze, Jr., Westford, and William J. White, Chelmsford, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 829,745, Sep. 1, 1977, Pat. No. 4,197,633. This application Aug. 16, 1979, Ser. No. 67,244
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **19 Claims**



1. A photodetector system comprising:
a semiconductor substrate having solid state signal processing circuitry therein;
an insulator layer over a surface of the semiconductor substrate;
a plurality of rows of contact pads projecting through the insulator layer to provide electrical contacts to the solid state signal processing circuitry;
a plurality of rows of photodetector material mounted on the insulator layer, each row of photodetector material having front and back surfaces, a region of first conductivity type proximate the back surface, and a plurality of regions of second conductivity type separated from one another and proximate the front surface;
first electrical contact means interposed between the back surface and the insulator layer for providing electrical contact to the region of first conductivity type; and
second electrical contact means for providing electrical contact between the regions of second conductivity type and the contact pads in an adjacent row of contact pads.

4,286,279
MULTILAYER SEMICONDUCTOR SWITCHING DEVICES

Jearld L. Hutson, 2019 W. Valley View La., Dallas, Tex. 75234

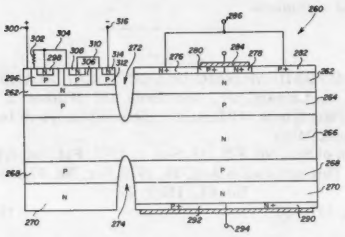
Division of Ser. No. 724,916, Sep. 20, 1976, Pat. No. 4,190,853, which is a continuation of Ser. No. 488,789, Jul. 15, 1974, abandoned. This application Nov. 15, 1979, Ser. No. 94,558
Int. Cl.³ H01L *29/747*
U.S. Cl. 357—39 **11 Claims**

1. A semiconductor switch and associated circuitry formed in a unitary semiconductor body comprising:
a semiconductor body having five layers of alternating first

and second semiconductor conductivity types, the outer layers and one of the intermediate layers being constructed from said first conductivity type,

a channel formed across one of said outer layers and extending through at least one of said layers to geometrically and electrically isolate first and second areas of said body, said one intermediate layer remaining integral and being common to and electrically available to both said first and second areas of said body,

regions of said second conductivity type being formed over said outer layers in said first area,



first electrodes contacting at least one of said outer layers and said regions of said second conductivity type to form a semiconductor switch in said first area,

at least one region of said second conductivity type formed in one of said outer layers in said second area, and

second electrodes contacting one of said outer layers and said region in said second area to form at least one electronic device which is geometrically and electrically isolated from said semiconductor switch in at least one mode, said electronic device operable in a second mode to provide switching signals through said one intermediate layer to cause switching operation of said semiconductor switch.

4,286,280

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

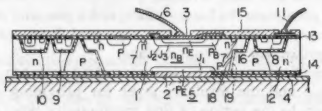
Yoshitaka Sugawara, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 6, 1979, Ser. No. 91,707

Claims priority, application Japan, Nov. 8, 1978, 53-136724

Int. Cl.³ H01L *27/04, 27/12*

U.S. Cl. 357—50 **9 Claims**



1. A semiconductor integrated circuit device comprising:

a semiconductor polycrystalline substrate having first and second principal surfaces on opposite sides of said polycrystalline substrate;

a semiconductor monocrystalline region formed in said semiconductor polycrystalline substrate to extend from the first principal surface of said substrate to the second principal surface thereof, said semiconductor monocrystalline region having a first principal surface formed in the first principal surface of said polycrystalline substrate and a second principal surface formed in the second principal surface of the polycrystalline substrate;

at least one semiconductor monocrystalline island formed in said semiconductor polycrystalline substrate adjacent to said monocrystalline region, said at least one monocrystalline island having a principal surface formed in said first principal surface of said polycrystalline substrate; and

a dielectric film formed between said at least one semiconductor monocrystalline island and said semiconductor polycrystalline substrate to isolate said at least one semiconductor monocrystalline island from said polycrystalline substrate and said monocrystalline region.

4,286,281

VIDEO FORMAT SIGNAL RECORDING AND REPRODUCING DEVICE

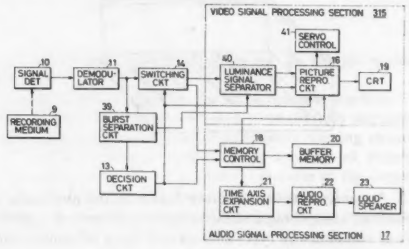
Tsutomu Suzuki, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 26, 1979, Ser. No. 79,006

Claims priority, application Japan, Sep. 30, 1978, 53-120827; Sep. 30, 1978, 53-120829; Oct. 4, 1978, 53-122895; Oct. 5, 1978, 53-123069; Oct. 5, 1978, 53-123070; Oct. 5, 1978, 53-123072; Nov. 9, 1978, 53-138199; Nov. 9, 1978, 53-138200; Feb. 28, 1979, 54-23926

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—4 **9 Claims**



1. A video format signal recording device for recording a video format signal on a recording medium comprising: means for inserting an identification signal in a blanking portion of each frame of said video format signal, said identification signal identifying whether data within a corresponding frame is video data or audio data, wherein said identifying signal inserting means comprises means for inserting a first video identifying signal corresponding to motion picture data means for inserting a second video identifying signal corresponding to still picture data, and wherein said first and second video identifying signals comprise first and second numbers of cycles of a color burst signal.

4,286,282

PERIODICALLY BIASED VIDEO DISC PLAYER SERVO SYSTEM

Todd J. Christopher, and James A. Wilber, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,014

Int. Cl.³ H04N *5/795*

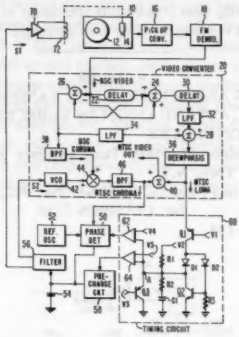
U.S. Cl. 358—8 **9 Claims**

1. In a video disc player of the kind including a video signal correction servo system comprising a reference oscillator for producing a reference signal, phase detector means responsive when enabled for comparing said reference signal with a first component of a video signal produced by said player and for providing an error voltage in response to said comparison and, a feedback path for applying said error voltage to a point in said player in a sense to minimize errors between said reference signal and said first component of said video signal, the improvement for periodically biasing said servo system to a predetermined point in its control range, comprising:

holding capacitor means for holding said error voltage;

precharging circuit means responsive when enabled for charging said holding capacitor means to a predetermined voltage level; and

timing circuit means synchronized with a second component of said video signal for enabling said phase detector means and said precharging circuit means during a first time interval, for enabling said phase detector means and disabling said precharging circuit means during a second time interval and for disabling said phase detector means and said precharging circuit means during a third time interval.

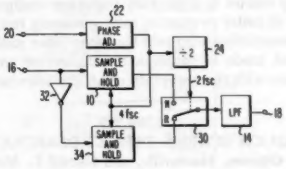


4,286,283

TRANSCODER

Jon K. Clemens, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 20, 1979, Ser. No. 105,548
Int. Cl.³ H04N 9/42
U.S. Cl. 358—11 **17 Claims**



1. A transcoder for reversing the phase of one of two signal components of a quadrature amplitude modulated subcarrier, comprising:

first means for producing sequential samples of the amplitude of said subcarrier at times corresponding to each axis crossing of each of said signal components;

second means for inverting the polarity of alternate ones of said samples; and

third means for reconstructing said subcarrier from the inverted and non-inverted samples without alteration of the sequence thereof.

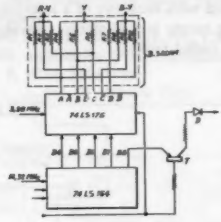
4,286,284

COLOR TELEVISION SIGNAL DECODING DEVICE

Gilles Deban, Viroflay, France, assignor to Sonotec S.A. - Societe Nouvelle de Produits et Techniques, Paris, France

Filed Oct. 15, 1979, Ser. No. 84,696
Claims priority, application France, Oct. 13, 1978, 78 29214
Int. Cl.³ H04N 9/42
U.S. Cl. 358—11 **6 Claims**

1. A color decoding device for signals from an NTSC coding source with respect to their coding in any system, characterized by: a shifting circuit for receiving series video signals, displacing them at a reference frequency, and transmitting four bits in parallel, a latch circuit for receiving said four parallel bits, sampling them at a frequency equal to one fourth of the reference frequency, and producing four signals and their complements, and a matrix of resistors for receiving selected ones of said four signals and their complements and for transforming them into luminance and chrominance signals for transmittal to a display device.

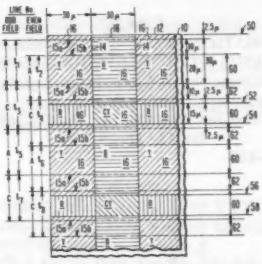


4,286,285

CHECKERBOARD COLOR FILTER PROVIDING TOLERANCE

Roland N. Rhodes, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,213
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 **8 Claims**



1. A color filter for use with an image pickup device having a plurality of photosensors, said filter comprising rows of a plurality of horizontally repetitive sets of color areas, the height of a first group of said color areas of alternate rows being less than the height of said color areas of a second group of the remaining alternate rows.

4,286,286

PHOTO CONTROLLED STEREOSCOPIC TELEVISION SYSTEM

Jaan Jurisson, Anoka County, and Aida S. Khalafalla, Hennepin County, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 2, 1979, Ser. No. 35,173
Int. Cl.³ H04N 9/54
U.S. Cl. 358—92 **4 Claims**

1. A stereo television receiving system comprising:

television camera means for recording a perceptible scene from left and right viewpoints by generating field scans corresponding thereto;

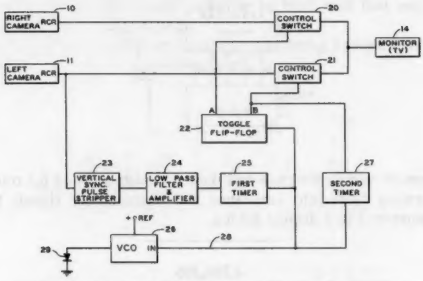
television receiver in communication with said camera means for displaying the images recorded by said camera means;

multiplexing means for interlacing field scans of said images from said left and said right viewpoints during each television frame;

light emitting means connected to said multiplexing means for emitting coded pulses of light associated with each of said interlaced scans;

stereo viewing means having left and right shutter means, one associated with each eye of a television viewer;

photo detector means in said stereo viewing means for receiving said coded pulses;



electronic switching means in said stereo viewing shutter means for opening and closing said shutter means; and

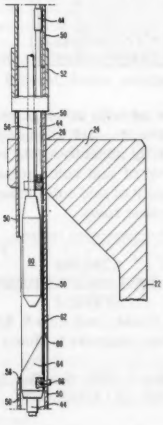
synchronization means for controlling said electronic switching means utilizing said coded pulses such that the corresponding eye is exposed to the corresponding scan of each frame.

4,286,287

IRRADIATION SPECIMEN INSTALLATION APPARATUS WITH TELEVISION INSPECTION

Charles F. Williams, Swartz Creek, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1980, Ser. No. 112,365
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—100 **5 Claims**



1. Apparatus for remotely manipulating irradiation specimens comprising:

a tubular member having a cap on its lower end and having an opening therein near its lower end;

a central rod slidable disposed in said tubular member;

a plurality of pivotable grippers attached to said cap and arranged to contact said central rod for gripping an irradiation specimen when said central rod is moved within said tubular member;

a camera disposed in said tubular member near said opening for remotely viewing said irradiation specimen; and

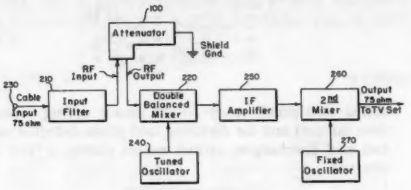
a diverting mechanism attached to said central rod and arranged near said opening for causing said camera to slide out of said tubular member and into a configuration for viewing said irradiation specimen as said irradiation specimen is being held by said grippers.

4,286,288

APPARATUS AND METHOD FOR TAMPER RESISTANT CHANNEL ATTENUATION IN SUBSCRIPTION TELEVISION CONVERTER

James K. Waldo, El Paso, Tex., assignor to Teleprompter Corp., New York, N.Y.

Filed May 25, 1979, Ser. No. 042,355
Int. Cl.³ H04N *7/16*
U.S. Cl. 258—114 **12 Claims**



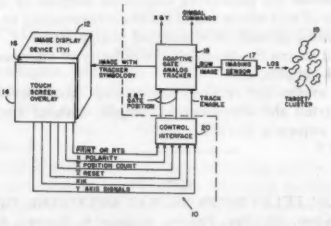
1. A tamper resistant subscription television converter, including a Radio Frequency circuit, comprising at least one bandstop filter means for attentuating a preselected subscription television band while passing the remaining television bands; said bandstop filter means being connected in said Radio Frequency circuit at a position requiring realignment of said converter in order to receive said remaining television bands; whereby tampering with said bandstop filter means, after said realignment tends to misalign the converter and thus cause interference with the reception of all the television bands.

4,286,289

TOUCH SCREEN TARGET DESIGNATOR

Robert B. Ottesen, Huntsville, and Gerald L. Morris, Athens, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 31, 1979, Ser. No. 89,826
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—125 **5 Claims**



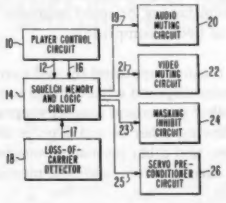
1. In a target tracking system having a tracker for providing gimbal commands for pointing an object along a target line-of-sight, an imaging sensor means for detecting the target position with respect to the object line-of-sight, and an image display means for visually displaying the target image, the improvement comprising: a touch screen overlay disposed adjacent the image display means for viewing visual display of said target image therethrough and having touch selectable outputs identifying where coordinates are touched on the touch screen, and

control interface means coupled between said touch screen overlay outputs and said tracker for providing track enable and coordinate position input signals indicative of said target position in the field of view of said imaging sensor means said control interface means comprising first and second channels coupled to said touch screen outputs for separately processing signals indicative of respective x and y coordinate data and a track enable signal to said tracker, each of said channels comprising counter means adapted to receive coordinate axis input data and reset input data, a digital to analog converter, quadrant logic means adapted for coupling signal data from said counter means to said converter, and operational amplifier means coupled to and responsive to said converter for providing coordinate axis output data for providing tracker input position data.

4,286,290
FAST RECOVERY SQUELCH CIRCUIT FOR A VIDEO DISC PLAYER

Gerald D. Pyles, Danville; James A. Wilber, and Todd J. Christopher, both of Indianapolis, all of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1979, Ser. No. 68,015
Int. Cl.³ H04N 5/76
U.S. Cl. 358—128.5 **11 Claims**



1. A squelch circuit for use in a video disc player of the kind comprising a pickup transducer for producing an FM output signal representative of information recorded on a video disc, a video demodulator responsive to said FM signal for producing a video signal and a video signal correction servo system responsive to said video signal and a reference signal for producing an error signal representative of deviations of said video signal from a prescribed relationship with said reference signal, means for feeding back at least one correction signal to a point in said video disc player in a sense to minimize said deviations, said squelch circuit being arranged to apply a squelch signal to a point in said video signal correction servo system, wherein said video signal correction servo system includes a phase detector for producing said error signal and a holding capacitor for storing said error signal, the improvement wherein said squelch circuit comprises:

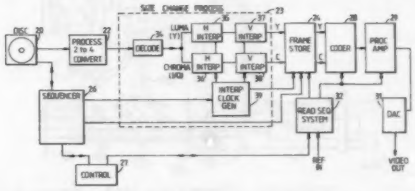
switch means arranged to clamp said holding capacitor to a source of reference voltage of a given value when closed; and

circuit means responsive to said squelch signal for supplying a muting signal to said video demodulator to disable said phase detector in said video signal correction servo system and for supplying a closure signal to said switch means for preconditioning said video signal correction servo system to a predetermined point in its control range corresponding to said given value of said reference voltage.

4,286,291
DIGITAL VIDEO PROCESSOR

Richard J. Taylor, London, England, and Phillip P. Bennett, Foster City, Calif., assignors to Micro Consultants Limited, Berkshire, England

Filed Mar. 10, 1980, Ser. No. 128,709
Claims priority, application United Kingdom, Mar. 22, 1979, 10113/79; Nov. 9, 1979, 38847/79
Int. Cl.³ H04N 7/00
U.S. Cl. 358—138 **12 Claims**



1. A digital video processor system for reducing the number of digital data samples relative to that received at an input thereof by effectively reducing the data sample rate comprising:

input processor means including a separator for receiving digital video data from spacially adjacent video lines and separating said data into high and low frequency components;

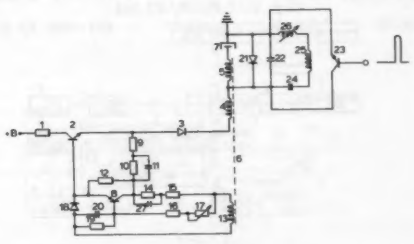
a first adder for adding together the high frequency component from each line; and

a second adder for adding selected portions of the video data from said first adder to selected portions of the low frequency component to provide the reduction in data therefrom by a factor of two.

4,286,292
TELEVISION RECEIVER SUPPLY CIRCUIT

Francesco Marino, Caserta, Italy, assignor to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed Apr. 3, 1980, Ser. No. 136,840
Claims priority, application Italy, Apr. 5, 1979, 67712 A/79
Int. Cl.³ H04N 5/44
U.S. Cl. 358—190 **9 Claims**

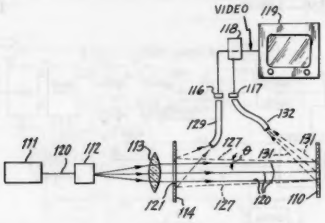


1. In a television receiver having a load circuit, a d.c. supply voltage source, and a pilot pulse source, a supply circuit including a first transistor responsive to the pulses from the pilot pulse source to be switched between saturation and cut off so as to conduct current periodically from the supply voltage source to the load circuit, the improvement comprising connecting means arranged between the first transistor and pilot pulse source and operative to maintain the impedance at the output of the pilot pulse source substantially constant during the operating cycle of the supply circuit .

4,286,293
LASER SCANNING AND MULTIPLE DETECTION FOR VIDEO IMAGE PROCESSING

Donald P. Jablonowski, Dunwoody, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed May 30, 1979, Ser. No. 43,953
Int. Cl.³ H04N 3/02
U.S. Cl. 358—199 **6 Claims**



1. A method for obtaining an enhanced video signal, representing a ceramic substrate having a metallic pattern thereon, the method comprising the steps of:

raster scanning a narrow beam of illumination over the surface of the patterned substrate;

monitoring radiation scattered by the scattered substrate with a plurality of detectors wherein a first detector detects radiation scattered at low angles by the surface of the patterned substrate while a second detector detects the radiation scattered at high angles by said surface;

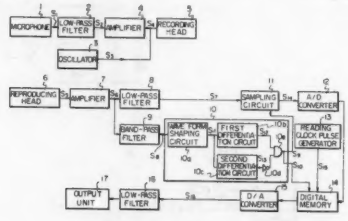
generating a video signal at the output of each detector, each video signal representing the scattered radiation impinging thereon; and

subtracting the video output of the second detector from the first detector to form a composite video signal having enhanced contrast.

4,286,294
RECORDING/REPRODUCING SYSTEM

Shunsaku Nakauchi, and Fumio Watase, both of Mitaka, Japan, assignors to Kokusai Gijutsu Kaihatsu Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,657
Claims priority, application Japan, Dec. 7, 1977, 52-146876
Int. Cl.³ G11B 5/02, 5/00
U.S. Cl. 360—27 **5 Claims**



1. A method for reproducing a signal of the type containing an analog signal and a reference signal superposed thereon from a recording medium which moves relative to a sensor, comprising the steps of:

sampling said analog signal from said sensor to produce samples at a first rate determined by said reference signal from said sensor;

storing said samples in a memory at said first rate;

reading out said samples from said memory at a fixed predetermined frequency;

converting said samples read out from said memory into a continuous analog signal;

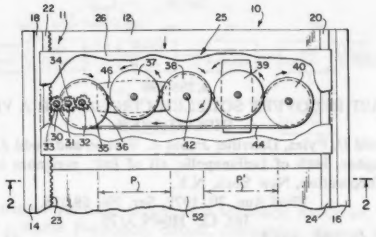
monitoring the number of said samples contained in said memory; and

controlling the speed of motion of said recording medium relative to said sensor in a manner effective to maintain said number of samples contained in said memory at a predetermined amount.

4,286,295
DEVICE FOR ERASING VISIBLE RECORDED SIGNALS FROM A RECORDING MEDIUM HAVING ORIENTED MAGNETIC COMPONENTS

George Ipolyi, 91 Fulton St., Brentwood, N.Y. 11717

Filed Jun. 22, 1979, Ser. No. 50,967
Int. Cl.³ G11B 5/47, 5/12
U.S. Cl. 360—66 **8 Claims**



1. A device for erasing recorded signals from an elongated recording medium having oriented magnetic components responsive to force fields, comprising:

a carriage;

a permanent magnet supported by said carriage and having N and S poles disposed adjacent said medium;

at least one other permanent magnet supported by said carriage and having other N and S poles disposed adjacent said medium, said other permanent magnet axially spaced along said carriage from said first mentioned permanent magnet; and

rotatable drive means coupled to said magnets, between said poles of each of said magnets, and arranged to rotate the poles of each of said magnets in a plane parallel to said medium for restoring said magnetic components to preoriented condition.

4,286,296
TRANSDUCER POSITIONING SYSTEM

Earl A. Cunningham, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,905
Int. Cl.³ G11B 21/10, 5/58, 17/00
U.S. Cl. 360—77 **17 Claims**

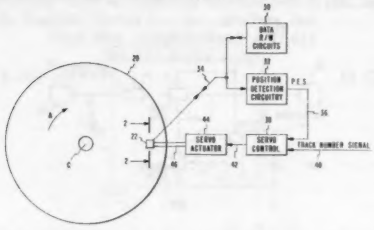
1. Apparatus for generating an indication of position with respect to a predetermined path, comprising:

first and second tracks adjacent opposite sides of said path, each of said tracks comprising a plurality of designations of a first type interrupted by designations of a second type which have different lengths than the designations of the first type;

transducing means for detecting said designations of said tracks so as to provide a composite output signal which includes a fundamental signal and a harmonic signal wherein the amplitude of the harmonic signal varies as the transducer is moved from one side of said path to the other side of said path, and

means providing a signal indicative of the amplitude of said

harmonic as the harmonic changes with movement of said transducing means across said tracks so as to thereby



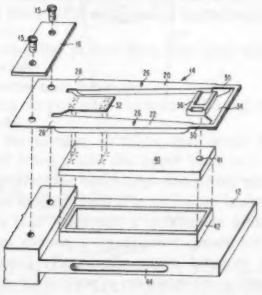
indicate the position of said transducing means with respect to said tracks.

4,286,297

SUSPENSION FOR FLYING MAGNETIC HEAD

Ronald R. Root, Rochester, Minn.; Michael W. Warner, and Robert B. Watrous, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1979, Ser. No. 73,060
Int. Cl.³ G11B *5/48, 21/20*
U.S. Cl. 360—103 **4 Claims**



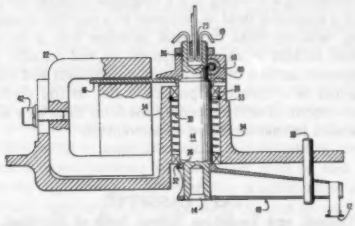
1. A magnetic head arm assembly comprising:
a suspension element having two legs, said legs being joined by a cross-section portion at one end;
a flexible portion extending from said cross-section portion and projecting between said legs;
a rectangular lid-like element, said flexible portion and lid-like element being joined;
a box-like arm structure joined to said suspension;
said lid-like element being matingly insertable into a cooperating opening in said box-like arm structure;
a rigid element attached to said legs at the opposite end of said suspension element; and
a magnetic head slider mounted to said rigid element, said suspension legs have rigid central sections and flexible end sections bounding said central sections
whereby said head slider is adapted to move orthogonally relative to the surface of said box-like arm structure so that roll motion of the head slider is minimized.

4,286,298

PRELOADED HEAD ARM ASSEMBLY

Helfried O. Rinkleib, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 103,966
Int. Cl.³ G11B *21/24, 21/08*
U.S. Cl. 360—109 **3 Claims**



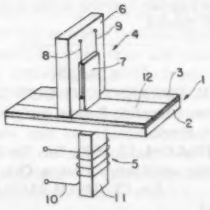
1. A magnetic head arm assembly comprising:
a frustoconical hollow head arm having a base at one end and a narrowed apex at the other end, the thickness of the walls of said arm being tapered from said base to said apex;
means formed in said arm at said base for mounting said arm to an actuator;
a magnetic transducer mounted to said arm at said apex;
a rotatable shaft to which said head arm is mounted;
a fixed bearing attached at one end of said shaft;
a floating bearing coupled at the other end of said shaft adjacent to said head arm for enabling vertical adjustment of said rotatable shaft;
a compression spring coupled to said shaft and disposed between said bearings; and
an adjusting nut for varying the compression of said spring to move and adjust the vertical position of said shaft and said head arm.

4,286,299

MAGNETIC HEAD ASSEMBLY FOR RECORDING OR REPRODUCING VERTICALLY MAGNETIZED RECORDS

Ryuji Shirahata, and Tatsuji Kitamoto, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 11, 1979, Ser. No. 83,712
Claims priority, application Japan, Oct. 17, 1978, 53-127661
Int. Cl.³ G11B *5/12, 5/20*
U.S. Cl. 360—113 **4 Claims**



1. A magnetic head assembly for recording and reproducing information on a recording medium in the form of vertical magnetization patterns having a primary magnetic field component perpendicular to said recording medium comprising:
a main head, said main head comprising a substrate, a member having a magnetoresistance effect provided on said substrate, and first and second lead terminals coupled to said member for detecting a variation of the resistance of

said member, wherein said member comprises a body of material having a rectangular cross section at an end adjacent to and parallel with a surface of said recording medium and extending further in a direction perpendicular to the direction of movement of said recording medium than in a direction parallel to said direction of movement; and

an auxiliary head disposed on an opposite side of said recording medium opposite said main head, said auxiliary head comprising a winding and a magnetic member for producing a magnetic field in response to a current in said winding, wherein said magnetic member has a rectangular cross section at an end adjacent to and parallel with an opposite surface of said recording medium and extending further in a direction perpendicular to the direction of movement of said recording medium than in a direction parallel to said direction of movement.

4,286,300

TAPE CASSETTE

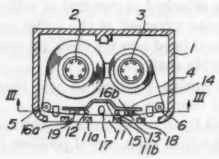
Akira Osanai, and Toshihisa Nakao, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Dec. 13, 1978, Ser. No. 968,741

Claims priority, application Japan, Dec. 13, 1977, 52-167361[U]

Int. Cl.³ G11B *15/60, 23/08*

U.S. Cl. 360—130.32 **4 Claims**



1. A tape cassette, comprising a cassette housing having upper and lower portions and a front edge, a magnetic tape accomodated therein, a pair of openings provided at the front edge of the housing for receiving a magnetic head, an opening for a pinch roller, and a pair of tape press pad springs integrally formed with the cassette housing, the housing forming a capstan opening through the upper and lower portions near the center of the front edge between two head receiving openings, one of said pad springs extending from one side of the capstan opening and around the capstan opening to the head receiving opening at the other side thereof, and the other of said pad springs extending from the other side of the capstan opening and around the capstan opening to the head receiving opening at the one side thereof.

4,286,301

H.V. CURRENT CUT-OUT CIRCUIT

Doan Pham Van, Meyzieu, France, assignor to Delle-Alsthom, Villeurbanne, France

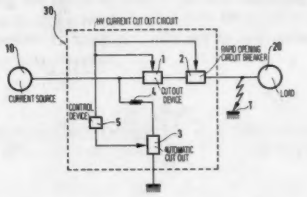
Filed Oct. 12, 1979, Ser. No. 84,322

Claims priority, application France, Oct. 12, 1978, 78 29145

Int. Cl.³ H01H *33/59*

U.S. Cl. 361—3 **8 Claims**

1. A high-voltage cut-out circuit for an electric installation having an input side and an output side, a current source installed on the input side of the circuit and an earth fault possibly occurring on its output side, the improvement wherein between the input side and the output side, it includes, for each phase, in series, a very rapid opening cut-out device (**1**) with a high arcing voltage, and a rapid opening circuit-breaker (**2**) and, shunt-connected between the input of the cut-out device with a high arcing voltage and earth, a resistance (**4**) for limiting an earthing current and an automatic cut-out (**3**) with a very short closing time and a short opening time, said circuit further comprising means (**5**) for performing the sequence of following operations in a time shorter than half a period: closing the automatic cut-out, opening the high arcing voltage



device, opening the rapid-opening circuit-breaker and the automatic cut-out, and when the current passes through zero, cutting out the high arcing voltage device, the rapid-opening circuit-breaker and the automatic cut-out.

4,286,302

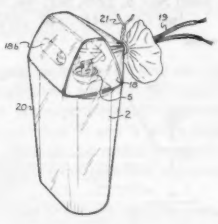
ELECTRICAL CAPACITOR PROTECTIVE ARRANGEMENT

Michael Owens, Hendersonville; Roy W. Waldroup, Fletcher, and Warren Halper, Hendersonville, all of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1979, Ser. No. 42,585

Int. Cl.³ H02H *7/16*

U.S. Cl. 361—15 **5 Claims**

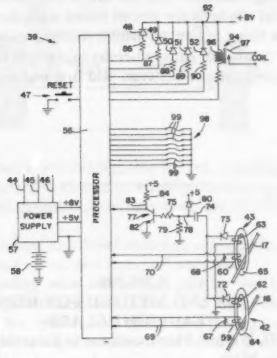


1. Capacitor protective apparatus comprising, in combination, an electrical capacitor of a type adapted to be embedded in encapsulating material in a container, said capacitor comprising a sealed casing containing a capacitor section and having external terminal means electrically connected to said capacitor section mounted on a portion of said casing and projecting outwardly therefrom, said capacitor during operation being subject to failure conditions causing outward displacement of said casing portion and said terminal means thereon, interrupter means associated with said casing portion for automatically breaking the electrical connection between said capacitor section and said terminal means upon said outward displacement of said casing portion and said terminal means, and protective means on said capacitor for maintaining a vacant space outwardly adjacent said terminal means when said capacitor is encapsulated in a container, so that said casing portion with said terminal means mounted thereon can be outwardly displaced without restriction by the encapsulating material upon the occurrence of said failure conditions, thereby providing for operation of said interrupter means prior to rupture of said casing, said protective means comprising a guard member arranged on said casing and defining said vacant space adjacent said terminal means, said guard member comprising an elongated tent-like structure open at opposite ends and formed of a folded strip of stiff sheet member.

4,286,303
PROTECTION SYSTEM FOR AN ELECTRIC MOTOR

Stephen R. Genheimer, Bethany, Okla.; John A. Whitney, Fort Wayne, and Linda M. Reinhard, Bluffton, both of Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Mar. 19, 1979, Ser. No. 21,613
Int. Cl.[3] H02H 7/085
U.S. Cl. 361—24 15 Claims



1. A method of controlling and protecting an electric load that is adapted to be connected to a power supply by two or more power lines, said method comprising the steps of:

(a) coupling to at least one of the lines to sense the level of power current flowing through the line;

(b) comparing the power current level with an upper limit and a lower limit;

(c) comparing the length of time it is outside the limits with a preselected time interval when the current level is outside of said limits and determining that a fault condition exists when the level is outside said limits longer than said time interval;

(d) disconnecting the power from the load when a fault condition exists;

(e) starting a reset time interval;

(f) reconnecting the power to the load at the end of said reset time interval;

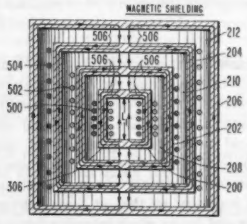
(g) counting the number of faults that occur due to the current level being above the upper limit; and

(h) varying the length of said reset time interval dependent on said number of said faults.

4,286,304
DEGAUSSING ARRANGEMENT FOR MASER SURROUNDED BY MAGNETIC SHIELDING

Edwin A. Goldberg, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,246
Int. Cl.[3] H01S 1/00; H01F 13/00
U.S. Cl. 361—149 9 Claims



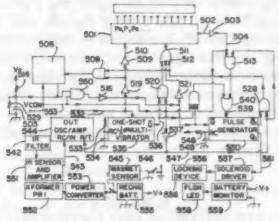
1. A degaussing arrangement for a maser surrounded by magnetic shielding, wherein said shielding comprises a plurality of spaced ferromagnetic cans of graduated size each of which encloses all cans smaller than itself, wherein said maser is situated within the interior of the smallest and hence innermost one of said cans, and wherein said maser includes a given helical coil winding situated within the interior of said innermost can and adapted to produce within the interior of said innermost can during operation of the maser a substantially uniform D.C. magnetic field in a direction substantially parallel to the axis of said given helical coil winding in response to a D.C. current flowing through said given helical coil winding; said degaussing arrangement comprising:

said given helical coil winding and at least one additional helical coil winding oriented substantially coaxial with said given helical coil winding, any additional helical coil winding being situated exterior to said innermost can and within a space between two adjacent ones of said cans, whereby degaussing of said shielding is achieved by simultaneously applying A.C. degaussing current to said given and additional helical coil windings.

4,286,305
ELECTRONIC SECURITY DEVICE AND METHOD

Eugene R. Pilat, 2035 Audubon Dr., Glendale Heights, Ill. 60137; George J. Franks, Jr., 261 Whitehall Dr., Palatine, Ill. 60072, and Jerry F. Dyben, 541 Kirkmore Dr., New Haven, Ind. 46779

Filed Apr. 10, 1979, Ser. No. 28,861
Int. Cl.[3] H04Q 9/00
U.S. Cl. 361—172 11 Claims



1. An electronic security assembly comprising, in combination, a lock unit adapted to be mounted on a lockable element, said lock having a bolt unit movable between open and closed positions, said movement between open and closed positions being at least partially controlled by an electronic circuit comprising a key element for transmitting a train of a predetermined number of pulses and an unlocking element for receiving said train of pulses, said key element containing counter means able to be preset to a given number, an oscillator adapted, when energized, to emit a continuous stream of pulses at a predetermined frequency, means in said key for periodically interrupting said stream of pulses from the oscillator under the control of the counter, whereby said stream of output pulses is subdivided into a plurality of trains of pulses, each train comprising said given number of pulses, means for transmitting said trains of pulses from said key element to said unlocking element, said receiving element including a presettable counter for determining the number of pulses in each of said train of pulses, means for comparing the number of pulses actually in said train and said given number, and means for producing an unlocking signal permitting said bolt to move to said open position when said numbers coincide.

4,286,306
CIRCUIT ARRANGEMENT FOR COMPARING THE SYNCHRONISM OR TRACKING BETWEEN TWO ANALOG SIGNALS

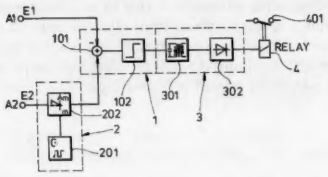
Hermann Kraus, Ottobrunn; Peter Kirchlechner, Siegertsbrunn; Robert Rieger, Aying, and Wolf-Dieter Schuck, Neubiberg, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 31, 1979, Ser. No. 62,497

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834805

Int. Cl.³ B60K *31/00*

U.S. Cl. 361—242 **16 Claims**



1. A circuit arrangement for the comparing of the synchronism of two analog signals, comprising first and second signal input means for said two analog signals, signal comparator means, means connecting said signal input means to said signal comparator means, said connecting means comprising at least one heterodyning means operatively connecting one of said signal input means to said signal comparator means, whereby at least one of said analog signals is heterodyned by a heterodyning signal having a given frequency and an alternating polarity, said signal comparator means comprising signal difference forming means and signal polarity detecting means operatively connected to said signal difference forming means for producing a difference signal signifying a positive or negative difference between said analog signals, and discriminator circuit means operatively connected to said comparator means for producing an error signal in response to the fact that difference signal zero transitions having said given frequency of said heterodyning signal are absent, said circuit arrangement further comprising feedback circuit means operatively interconnecting said comparator means and said heterodyning means for a self-oscillating operation.

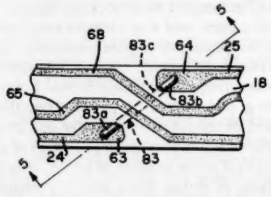
4,286,307
MULTILAMP PHOTOFLASH UNIT WITH CIRCUIT CROSSOVER

William J. Harvey, Trout Run; Glen E. Flook, Jr., and Randall H. LeFever, both of Williamsport, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 12, 1979, Ser. No. 84,236

Int. Cl.³ G03B *15/02*

U.S. Cl. 362—15 **16 Claims**



1. In a multilamp photoflash unit comprising, in combination, a printed circuit board having lamp firing circuitry on a surface thereof, an array of electrically ignitable flashlamps disposed on said circuit board, each of said flashlamps having a pair of lead-in wires connected to said circuitry, and said circuitry including first and second conductor runs which are spaced apart from each other on said surface of the printed circuit board, means for electrically interconnecting said first and second conductor runs comprising: a staple of conductive material having a pair of legs extending through said printed circuit board and having a center region positioned on the opposite side of said circuit board from said surface thereof, said legs being bent over said surface of the circuit board so as to secure said staple to the circuit board with each of said legs of the staple being in contact with a respective one of said first and second conductor runs, whereby said staple functions as an interconnecting jumper between said first and second conductor runs.

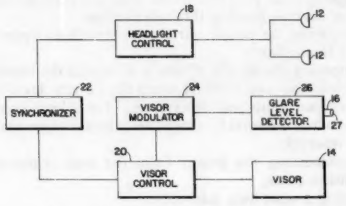
4,286,308
APPARATUS AND METHOD FOR REDUCING HEADLIGHT GLARE

Otto E. Wolff, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 4, 1979, Ser. No. 72,059

Int. Cl.³ F21V *9/14*

U.S. Cl. 362—19 **9 Claims**



1. An improved glare control system usable on a vehicle for reducing headlight glare from oncoming vehicles traveling along an adjacent path of travel, said control system including a headlight for illuminating the vehicle's path of travel, means for interrupting the light output of said headlight cyclically at a fixed frequency with each headlight cycle consisting of a fixed light emissive interval followed by a fixed nonemissive interval, a visor switchable between light transmissive and opaque states for, respectively, unblocking and blocking the operator's view of his vehicle's path of travel and said adjacent path of travel, and visor switching means operating cyclically in synchronism with said headlight cycle for automatically switching said visor to said transmissive state for a transmissive interval that coincides with said headlight emissive interval and thereafter being responsive to a visor modulation signal for switching said visor to said opaque state wherein said improvement comprises:

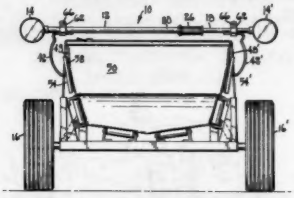
means for measuring the headlight glare intensity of said adjacent path of travel and providing a glare level signal that is proportional to the measured intensity; and

means responsive to said glare level signal for selectively providing said modulation signal to said visor switching means to automatically adjust the transmissive-to-opaque interval ratio of the visor cycle in accordance with measured glare intensity so that at least between predetermined upper and lower glare intensity limits the apparent density of said visor increases with increasing glare intensity and decreases with decreasing glare intensity.

4,286,309
DETACHABLE VEHICLE LIGHTING FIXTURE

Clarence Rasinski, 2516 W. 70-1/2 St., Richfield, Minn. 55423

Filed Feb. 7, 1980, Ser. No. 119,460
Int. Cl.[3] F21V *21/22*
U.S. Cl. 362—61 6 Claims

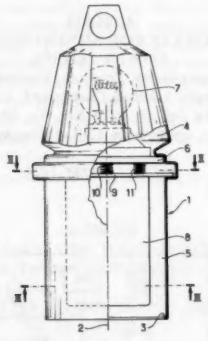


1. A detachable vehicle lighting fixture, comprising:
a length adjustable elongated member having opposite ends;
a brake light mounted proximate each end of said elongated member;
a pair of resilient cantilever retaining arms, each arm of said pair having a first and a second end; and
means mounting each arm of said pair by said first ends to said elongated member, at least one of said arms being adapted for movement along said elongated member toward and away from the other of said arms;
said arms biased toward one another.

4,286,310
LANTERN FED BY AN ELECTRIC BATTERY

Gerard Brainkel, Elbeuf, and Alain Battarel, St. Aubin les Elbeuf, both of France, assignors to Compagnie Industrielle des Piles Electriques "Cipel", Levallois-Perret, France

Filed Sep. 25, 1979, Ser. No. 78,677
Claims priority, application France, Oct. 20, 1978, 78 29903
Int. Cl.[3] F21L *7/00*
U.S. Cl. 362—203 11 Claims

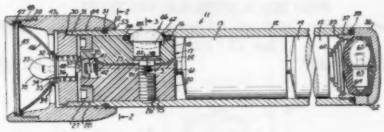


1. A battery-operated lantern comprising:
a housing having
a circumferential wall extending about a central axis,
a support member positioned transversely to said axis and defining one end of a battery compartment inside the circumferential wall of said housing, the battery compartment having an open end opposite said support member,
first guide means in the battery compartment extending parallel to the axis along the inside surface of the circumferential wall,
second guide means in the battery compartment extending circumferentially around the inside surface of said wall, and
a stop means on the inside surface of said wall and spaced circumferentially from the first guide means;
a light bulb mounted on said support means on the opposite side thereof from the battery compartment;
a pair of electrical contacts mounted in the battery compartment and conductively connected to the light bulb;
an electric battery removably positioned in the battery compartment, said battery having a pair of terminals; and
follower means associated with said battery for slidably engaging said first guide means for permitting said battery to be axially inserted into or withdrawn from the battery compartment at a first predetermined angular position, for slidably engaging the second guide means when the battery is inserted a predetermined distance into the battery compartment for permitting said battery to be rotated inside the said compartment between the first angular relation and a predetermined second angular relation at which the battery terminals conductively touch said electrical contacts, and for engaging said stop means when the battery is in said second angular position.

4,286,311
FLASHLIGHT

Anthony Maglica, 219 Armsley Sq., Ontario, Calif. 91762

Continuation-in-part of Ser. No. 894,492, Apr. 7, 1978, abandoned. This application Dec. 11, 1978, Ser. No. 968,468
Int. Cl.[3] F21L *7/00*
U.S. Cl. 362—205 5 Claims



3. In a flashlight comprising a casing having a longitudinal axis and a forward end, a reflector disposed adjacent the forward end of said casing, said reflector having a central opening therein, a light bulb support structure disposed rearwardly of said reflector, a light bulb releasably retained in said light bulb support structure, said light bulb extending through said central opening, and means for creating relative movement between said reflector and said light bulb to selectively vary the breadth of the light beam issuing from said flashlight, the improvement comprising:
a reflector support structure rotatably mounted on said casing adjacent said forward end thereof;
means connecting said reflector to said reflector support structure for rotation therewith;
means mounting said light bulb support structure within said casing for axial movement relative to said reflector support structure; spring means, normally urging said light bulb and said light bulb support structure forwardly in said casing;
cooperating camming means connected to said reflector and said light bulb support structure for moving said light bulb support structure axially in response to rotational movement of said reflector;
said cooperating camming means including an inclined camming surface connected to said reflector and a cam follower connected to said light bulb support structure;
whereby, rotation of said reflector support structure will cause rotation of said reflector which is connected thereto, and rotation of said reflector will, by virtue of said cooperating camming means and said spring means, cause axial movement of said light bulb support structure and said light bulb retained thereby to alter the breadth of the light beam issuing from said flashlight;
a pair of spaced conductor strips disposed within said casing, and a switching structure for selectively establishing electrical connection between said spaced conductor strips;

and means establishing electrical connection between one of said conductor strips and said light bulb; said other of said conductor strips being adapted to electrically contact batteries disposed in said casing; said switch structure including:

a drive plunger and an indexing member;

said drive plunger and said indexing member having cooperating surfaces, whereby movement of said drive plunger toward said indexing member will tend to cause rotation of said indexing member;

a bridging contact carried by said indexing member; said bridging contact being adapted to establish an electrical flow path from one of said conductor strips to the other; means for preventing rotational movement of said indexing member until said drive plunger has moved said indexing member so as to engage said bridging contact with each of said conductor strips; said means thereafter permitting said cooperating teeth on said drive plunger and said indexing member to cause rotational movement of said indexing member so as to cause said engaged surface portions of said bridging contact and said spaced conductor strips to wipe any products of oxidation or corrosion therefrom.

4,286,312

PORTABLE LIGHTING APPARATUS COMPRISING A DIFFUSING LENS

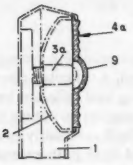
Raymond A. Benoit, Septeuil, France, assignor to Societe les Piles Wonder, France

Filed Sep. 5, 1979, Ser. No. 72,651

Claims priority, application France, Oct. 17, 1978, 78 29572

Int. Cl.³ F21V *7/00*

U.S. Cl. 362—309 **5 Claims**



1. A portable lighting apparatus comprising a case having a parabolic reflector, a bulb whose filament is situated substantially at the focus of the parabolic reflector and a square or rectangular shaped diffusing lens fixed at the periphery of the reflector, perpendicular to the optical axis thereof and comprising a series of rectilinear and adjacent scores on each of its internal and external faces, the scores of each series being formed by concave cylindrical surfaces having the same radius of curvature, the scores of one series being substantially perpendicular to those of the other series, wherein the radii of the scores of the internal face of the lens are slightly smaller than those of the scores in the external face of said lens, and wherein the depth and the radii of the two series of scores are chosen so that the pyramidal light beam therefrom gives substantially uniform illumination in any plane perpendicular to the optical axis.

4,286,313

BALANCED INDUSTRIAL LUMINAIRE

Honesto D. Quiogue, Blacksburg, Va., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Aug. 15, 1979, Ser. No. 66,814

Int. Cl.³ F21V *21/00*

U.S. Cl. 362—370 **14 Claims**

1. A luminaire assembly comprising:

a central housing having a lamp socket extending downwardly therefrom;

a capacitor;

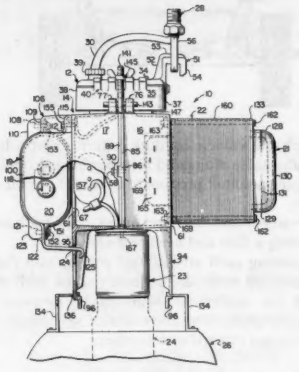
first means for mounting said capacitor on one side of said housing and externally thereof;

a ballast;

second means for mounting said ballast on a side of said housing opposite said capacitor with a major portion of said ballast being outside of said housing;

a top cover;

means for coupling said top cover to the top of said housing; and



means for suspending said luminaire assembly from a fixed support,

said means for suspending being located on said top cover laterally displaced towards said ballast and engaging the fixed support substantially above the center of gravity of said luminaire assembly,

said means for suspending being the sole load bearing element interconnecting said luminaire assembly and said fixed support.

4,286,314

INVERTER CIRCUIT FOR MINIMIZING SWITCHING POWER LOSSES

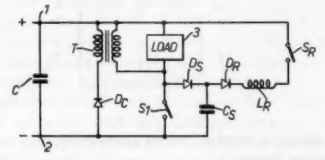
Robert B. Molyneux-Berry, Danbury, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Jul. 18, 1979, Ser. No. 58,522

Claims priority, application United Kingdom, Jul. 20, 1978, 30482/78

Int. Cl.³ H02M *1/18*

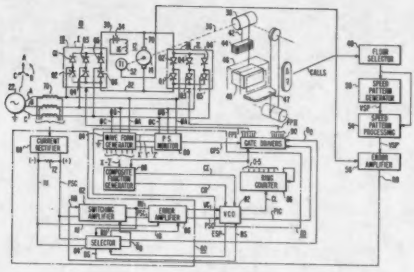
U.S. Cl. 363—55 **6 Claims**



1. An inverter circuit including a switch which is rendered conductive periodically so as to provide pulsed power from a power source to a load; a diode and a capacitor serially connected in a path which is in shunt with said switch, and a further switch coupled to said capacitor by means of which the capacitor is periodically discharged to return the energy stored by the capacitor to the power source, and wherein said capacitor and the further switch are connected in series across the input terminals of the inverter circuit to which, in use, power is applied from the power source so that when said further

switch is rendered conductive, the energy stored by the capacitor flows through the further switch back to the power source.

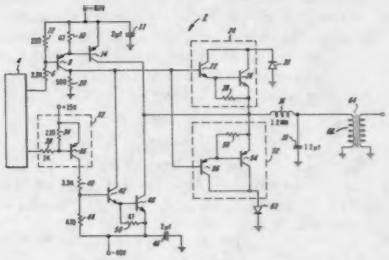
4,286,315
CONVERTER APPARATUS
Frederick O. Johnson, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jul. 27, 1979, Ser. No. 61,532
Int. Cl.³ H02P *13/24*
U.S. Cl. 363—87 **5 Claims**



1. Converter apparatus, comprising:
a source of alternating potential,
a load circuit,
converter means having controlled rectifier devices connected, and gateable in a predetermined sequence, to interchange electrical energy between said source of alternating potential and said load circuit,
gate drive means including pulse means for storing and subsequently releasing electrical energy to provide a gate drive pulse for each controlled rectifier device,
and control means for said pulse means, said control means providing signals which initiate the storage of electrical energy by the pulse means for each controlled rectifier device, normally a predetermined number of electrical degrees immediately prior to the time the controlled rectifier device is to be gated, and which subsequently triggers a release of the stored energy precisely when the controlled rectifier device is to be gated,
said predetermined number of electrical degrees being selected such that electrical energy is stored for only one currently non-conductive device at any instant.

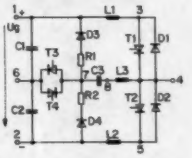
4,286,316
HIGH VOLTAGE SINE WAVE POWER SUPPLY
Clifford K. Friend, Tarzana, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Feb. 19, 1980, Ser. No. 122,168
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—131 **6 Claims**

1. A resonant circuit sine wave power supply comprising, a transformer (64), at least one resonant circuit (16, 18) coupled to the primary (62) of transformer (64), and sources of positive and negative dc voltages, characterized in
a first switching network (8, 14) coupled between the source of positive dc voltage and the resonant circuit (16, 18), a second switching network (42, 48) coupled between the source of negative dc voltage and the resonant circuit (16, 18), a third switching network (24) coupled between the resonant circuit (16, 18) and a reference potential, a fourth switching network (52) coupled between the resonant circuit (16, 18) and a reference potential, and switching means (a) for alternately switching the first and second switching networks to conduction during portions of the power generation cycle and (b) for alternately rendering one of the third or fourth switching networks conductive when the first and second switching networks are non-



conductive, whereby non-heat dissipative current flow is provided throughout the entire power generation cycle.

4,286,317
FORCED COMMUTATION POWER CONVERTER ARRANGEMENT IN REVERSE VOLTAGE FREE CIRCUIT CONFIGURATION
Karl Kommissari, Hemsbach, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Co. Ltd., Baden, Switzerland
Filed Aug. 16, 1979, Ser. No. 67,179
Int. Cl.³ H02M *7/515*
U.S. Cl. 363—136 **8 Claims**



1. A forced commutation power converter arrangement in reverse voltage free circuit configuration comprising:
positive and negative direct current input terminals and an output terminal;
a pair of series connected capacitors connected across said positive and negative input terminals and also to each other at a first connection point;
a commutation circuit composed of:
a first plurality of controllable current converter means arranged in parallel opposition and connected at one side to said first connection point;
a commutation capacitor connected to the other side of said controllable current convertor means;
a commutator choke connected between said commutation capacitor and a second connection point;
a load circuit connected across said positive and negative terminals, and composed of:
a second plurality of controllable current converter means connected between said inputs and said second connecting point;
a first plurality of non-controllable current converter means connected in parallel opposition to said second controllable current converter means; and
two first chokes, each connected between one of said inputs and a respective one of said second plurality of controllable current converter means;
said commutator capacitor being connected between said first plurality of controllable current converter means of said commutation circuit and said pluralities of controlla-

ble and non-controllable current converter means of said load circuit; and

a damping circuit connected between said commutator capacitor and said first plurality of controllable current converter means, and comprising a plurality of current converter means, so as to receive, through its plurality of current converter means, voltages supplied to said positive and negative input terminals of said power converter arrangement.

4,286,318
CONTROL LOOP

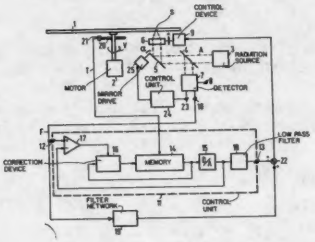
Kornelis A. Immink, and Abraham Hoogendoorn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 40,794

Claims priority, application Netherlands, May 3, 1979, 7901721

Int. Cl.³ G05B *11/01*

U.S. Cl. 364—118 **11 Claims**



1. A control loop for controlling a control quantity, said control loop comprising

a detection system for supplying an error signal which is indicative of the difference between the instantaneous value and the desired value of the control quantity, and

a control unit having an input terminal, which is coupled to the detection system, for receiving the error signal, and an output terminal, said control unit having a transfer characteristic with a number of peaks at a fundamental frequency and harmonics thereof and including

a memory device with a plurality of memory locations for storing digitally coded signal values,

a digital-analog converter, coupled to the memory device, for converting the digitally coded signal values supplied by the memory device into analog signal values,

means for applying said analog signal values to said output terminal,

comparison means for comparing the value of a signal value read from the memory device with the value of said error signal supplied by the detection system,

correction means, coupled to the memory device and to the comparison means, for correcting the signal values obtained from the memory device in dependence on the signal supplied by the comparison means, the correction applied having a maximum value which is small relative to the maximum attainable signal value,

and means for controlling read out and storage of said signal values in the memory device so that a number of signal values are read out from the memory device in accordance with a recurrent cycle and, after each read out of a signal value, the corrected signal value supplied by the correction means is stored in the memory instead of the signal value previously read, the cycle having a period equal to that associated with the fundamental frequency,

said loop further comprising a control device, coupled to said output terminal of said control unit, for changing the control quantity in response to said signal values.

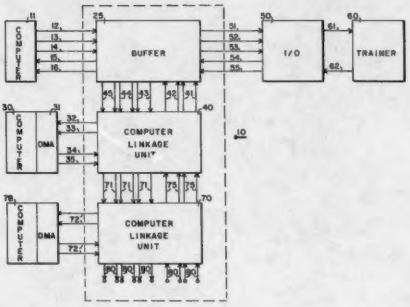
4,286,319
EXPANDABLE INTER-COMPUTER COMMUNICATION SYSTEM

Robert J. Membrino, Silver Spring; Raphael R. Some, Beltsville, and Van A. Quinn, Columbia, all of Md., assignors to The Singer Company, Binghamton, N.Y.

Filed Dec. 6, 1977, Ser. No. 857,916

Int. Cl.³ G06F *15/16, 15/56*; H04B *3/00*

U.S. Cl. 364—200 **20 Claims**



1. A expandable asynchronous parallel intercomputer communication system that provides a two-way communication signal channel between a master computer and a plurality of slave computers, and between said master computer and a plurality of peripheral units which are electrically and functionally compatible with said master computer, said master computer being separated from said plurality of slave computers and said plurality of peripheral units by varying transmission distances, said system comprising:

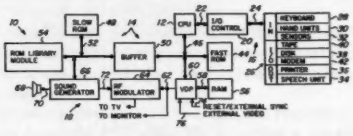
a. a buffer unit having at least three bidirectional channels so interconnected that signals received by said buffer unit on said first channel are provided to said second and third channels as described in this claim, and signals received by said buffer unit on said second and third channels are provided to said first channel as described in this claim, the first buffer unit bidirectional channel being electrically compatible with and coupled to said master computer and the second buffer unit bidirectional channel being coupled to at least one of said peripheral units, said second buffer unit bidirectional channel transmits electrical signals which are electrically and functionally identical to the signals that are transmitted on said first bidirectional channel so that the presence of said buffer unit does not affect the communications between said master computer and said plurality of peripheral units; the third buffer unit bidirectional channel comprising a bidirectional differential channel which transmits signals that have been electrically altered by said buffer unit without functionally altering the meaning of said signals so that electrical characteristics of said signals are maintained over long transmission distances; and

b. a first computer linkage unit for providing functional and electrical interface functions between said first slave computer and said buffer unit, said first computer linkage unit being coupled to said buffer unit at said third buffer unit bidirectional differential channel and coupled to said first slave computer so that said first computer linkage unit may maintain electrical and functional compatibility with said buffer unit and said first slave computer; whereby said first slave computer, and said first computer linkage unit may be added to an existing computer communication system without modifying the existing system.

4,286,320
DIGITAL COMPUTING SYSTEM HAVING AUTO-INCREMENTING MEMORY

Granville E. Ott, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 12, 1979, Ser. No. 20,111
Int. Cl.³ G06F *13/00, 13/06*
U.S. Cl. 364—200 **10 Claims**



1. A plug-in library module for use in a digital computing system having a central processing unit which provides the address of a selected one of a plurality of sequentially accessed address location in said library module, provides a read memory signal and is responsive to processing information provided thereto in response to said address, and interface means including a plug-in type port for temporarily receiving the library module and for providing communication between the central processing unit and said library module, said library module comprising:

memory means disposed within said library module, said memory means having processing information contained therein at sequentially accessed address locations, and outputting the processing information at each of said address locations in response to receiving the address thereof;

address counter means disposed within said library module for receiving and storing the address provided by said central processing unit, and providing said address stored therein to said memory means in response to the central processing means providing the read memory signal;

connector means disposed within said library module and connectable to the plug-in port of said interface means, said connector means connecting the address provided by said central processing unit to said address counter means, and connecting the processing information outputted by said memory means to said central processing unit; and

control means disposed within said library module and connected to said address counter means, said control means incrementing the address in said address counter means to the address of the next sequentially accessed address location in said memory means in response to said memory means outputting the processing information to said central processing unit in response to the address provided thereto by said address counter means, whereby the processing information contained in said next sequentially accessed address location will be provided by said memory means in response to a read memory sianal provided by said central processing unit.

4,286,321
COMMON BUS COMMUNICATION SYSTEM IN WHICH THE WIDTH OF THE ADDRESS FIELD IS GREATER THAN THE NUMBER OF LINES ON THE BUS

David C. Baker, Austin, Tex.; David F. Bantz, Chappaqua, and Carlo J. Evangelisti, Jefferson Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

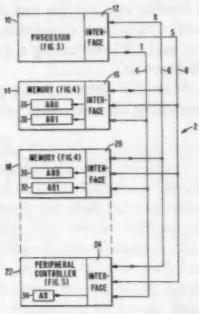
Filed Jun. 18, 1979, Ser. No. 49,532
Int. Cl.³ G06F *7/04*
U.S. Cl. 364—200 **7 Claims**

1. In a common bus communication system connected for information exchange between a processor and a plurality of subsystems which are each coded with a different identification number, with information exchange between said processor and a given subsystem occurring when said processor sends an information signal over said bus including the identification number of said given subsystem, in which the number of lines n on the bus are fixed, and any complete address field of an address register in a subsystem, which is to be transmitted over said bus, is m bytes wide and m is greater than the number of lines on the bus, where m and n are integers, and m>n the combination comprising:

a memory array included in each of said subsystems;

at least one m byte wide register included in each of said subsystems which stores the address of the last accessed memory location in a given region on said memory array;

means included in said processor for storing a copy of the contents of said one m byte wide address register of each subsystem;



means included in said processor for generating said coded identification number of a given one of said subsystems for selecting said given one of said subsystems to exchange information with by providing said coded identification number to said common bus for transmission to said subsystems; and

means included in said processor for comparing on a byte by byte comparison basis the copy of the contents of said one m byte wide address register of the selected subsystem with the m byte wide information signal to be exchanged, and in response to the comparison communicating n byte at a time over said n byte wide bus to said one address register of the selected subsystem only the bytes that do not match based on the comparison for updating the address stored in said one register to select the correct address in said memory array.

4,286,322
TASK HANDLING APPARATUS

Roy L. Hoffman, Pine Island; William G. Kempke, Rochester, both of Minn.; John W. McCullough, Atlanta, Ga.; Frank G. Soltis, and Richard T. Turner, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 3, 1979, Ser. No. 54,508
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—200 **8 Claims**

1. Task handling apparatus for a computer system having an addressable main storage for storing data and instructions including a dispatch task dispatching queue instruction, central processing unit (CPU) with means for fetching and executing instructions including said dispatch task dispatching queue instruction, said CPU having a normal active state and switchable into a wait state and input/output devices, the improvement comprising:

a plurality of task dispatching queues containing task dispatching elements in priority sequence each having a priority field, task dispatching element chain address field, status field and task dispatching queue address field, one of said task dispatching queues being a prime task dispatch-

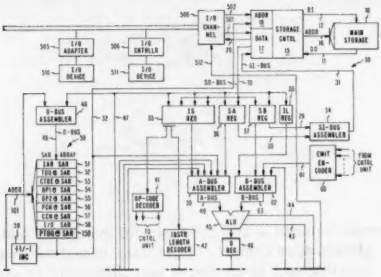
ing queue and all others being non-prime task dispatching queues, said task dispatching queues being addressable and having a task dispatching element chain address for locating the highest priority task dispatching element on the task dispatching queue, said task dispatching element chain address having a particular value for indicating that the task dispatching queue has no task dispatching elements enqueued thereon,

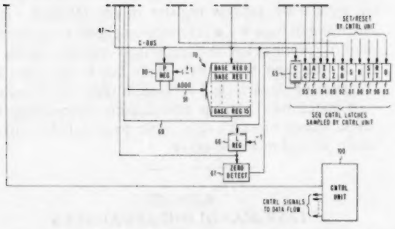
current task dispatching queue register means for containing an address for addressing a current task dispatching queue,

prime task dispatching queue register means for containing an address for addressing said prime task dispatching queue,

means for loading said current task dispatching queue register means with a task dispatching queue address in response to said CPU executing a dispatch task dispatching queue instruction,

detecting means for detecting said particular value of said task dispatching element chain address,





means responsive to said detecting means detecting said particular value of a task dispatching element chain address of a non-prime task dispatching queue for transferring the address in said prime task dispatching queue register means into said current task dispatching queue register means and responsive to said detecting means detecting said particular value of a task dispatching element chain address of said prime task dispatching queue for switching said CPU into said wait state, and

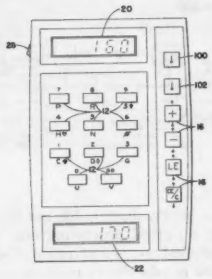
task dispatching means having first means for rendering the highest priority task dispatching element of the current task dispatching queue active by loading the contents of its status field into said CPU and having second means for storing task status from said CPU into the status field of the current task dispatching element when said current task dispatching element is not the highest priority task dispatching element on said current task dispatching queue.

4,286,323

ELECTRONIC SCORING DEVICE

Horace H. Meday, 1322 Martino Rd., Lafayette, Calif. 94549

Filed May 14, 1979, Ser. No. 38,645
Int. Cl.³ G06F *15/44;* A63B *71/06*
U.S. Cl. 364—411 **8 Claims**



1. A hand-held electronic scoring device, which comprises:

(a) a case,

(b) A plurality of double entry score keys on said case, each representing a particular number and an alphabetical letter of a mnemonic code for entry of information of scoring significance in a game being played independent of said device, at least some of the letters representing more than one event of scoring significance, with selection from the more than one event being determined by keystroke sequence for an entry,

(c) a plurality of function keys on said case with at least one of said function keys for choosing between entry of the particular number and the letter for a keystroke of one of the double entry score keys and at least one function key for assigning the entry to one of said first and second displays,

(d) first and second display means in said case having a distinguishing characteristic from each other and being assignable to opposing sides of a game, and

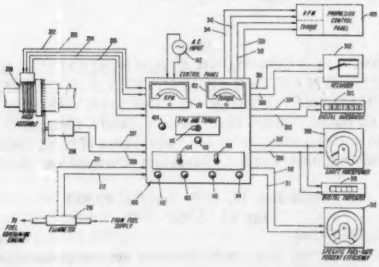
(e) circuit means connected to said double entry score keys, function keys and first and second display means to receive score information, carry out functions thereon and display a resulting score on the one of said displays for which the score information is entered.

4,286,324

PRIME MOVER FUEL EFFICIENCY CONTROL SYSTEM

Maxwell Ingram, 230 Anderson St., Hackensack, N.J. 07601

Filed Sep. 24, 1979, Ser. No. 78,089
Int. Cl.³ F02C *9/56;* G01L *3/26;* G05D *17/02*
U.S. Cl. 364—442 **12 Claims**



12. A system for determining and controlling the power being transmitted through a rotated shaft from a fuel-consuming engine, comprising:

first means on said shaft for generating a signal representative of torque transmitted through said shaft;

second means on said shaft for generating a signal representative of shaft rotational speed;

third means multiplying said signals from said first and second means to produce a signal representative of the horsepower being transmitted through said shaft;

fourth means coupled to the engine for producing a signal representative of the rate of fuel consumed in the transmission of power through said shaft;

fifth means dividing the signal from said fourth means by the signal from said third means to produce a signal representative of specific fuel rate, reflecting instantaneous engine efficiency;

sixth means coupled to said fifth means and responsive to the signal from said fifth means for providing a visually perceptible output of specific fuel rate and instantaneous efficiency;

seventh means coupled to receive said signal from said first means for producing a variable feedback signal for controlling engine torque; and

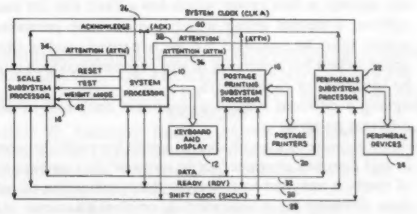
eighth means coupled to receive said signal from said second means for producing a variable feedback signal for controlling engine speed, whereby engine speed and torque operating parameters may be controlled and specific fuel rate may be monitored so as to maximize fuel efficiency.

4,286,325

SYSTEM AND METHOD FOR COMPUTING DOMESTIC AND INTERNATIONAL POSTAGE

Daniel F. Dlugos, Huntington; Gary G. Hansen, Greenwich, and John H. Steinmetz, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Aug. 27, 1979, Ser. No. 70,234
Int. Cl.[3] G06F *15/20*; G01G *23/42*
U.S. Cl. 364—466 **18 Claims**



1. A method of calculating a postage value for an article to be mailed to one of a plurality of foreign countries sharing common structured rate data in the form of equation boundary conditions and instructions, said method comprising the steps of:

(a) selecting postal information indicative of the carrier-type class and destination of the article to be mailed,

(b) obtaining weight information for said article to be mailed,

(c) processing said postal information and said weight information to determine whether common structured rate data can be accessed for calculating a postage value for said article,

(d) accessing common structured rate data for said article, and

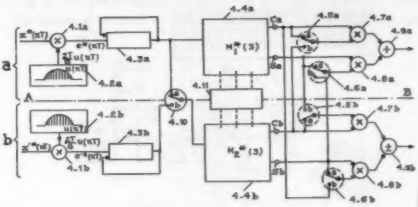
(e) generating a postage value for said article to be mailed from at least one equation of an equation set in accordance with said accessed common structured rate data, comprising boundary conditions for said one equation and instructions directing the use of said one equation.

4,286,326

DIGITAL DEVICES FOR SPECTRUM ANALYSIS

Jean P. Houdard, Orsay, France, assignor to Le Materiel Telephonique, Boulogne-Billancourt, France

Filed Apr. 23, 1979, Ser. No. 32,379
Claims priority, application France, Apr. 27, 1978, 78 12477
Int. Cl.[3] G06F *15/31*
U.S. Cl. 364—485 **6 Claims**



1. A digital device for analyzing the spectrum of a signal X(t), said signal having the spectral transform X(f), $-Fe/2<f<Fe/2$, and previously having been sampled at a frequency $Fe=T$, and linearly quantized and encoded to produce a digital series $X^*(nT)$, said device measuring the power spectral density of said signal and including:

(a) a limiting gate of width $\tau=NT$ connected to the input of the device for processing the incoming signal $X^*(nT)$;

(b) a perfect digital resonator, including first and second delay circuits each of delay T, connected to said limiting gate, said resonator having a first output S, known as the "sine" output and a second output "C" known as the "cosine" output; and

(c) a read-only memory connected to said resonator, said memory storing q group of three coefficients, 2 cos 2π fpT, and sin 2π fpT, respectively, corresponding to the q frequencies of the analysis, characterized in that the device further comprises:

(d) at least one read-write memory comprising a looped shift-register inserted between the output of said limiting gate and the input of said perfect resonator for storing N samples of said signal; and

(e) means, connected to said first and second delay circuits in said perfect resonator, for resetting said delay circuits after the passage of the N samples stored in said read-write memory.

4,286,327

APPARATUS FOR NEAR INFRARED QUANTITATIVE ANALYSIS

Robert D. Rosenthal, and Scott B. Rosenthal, both of Gaithersburg, Md., assignors to Trebor Industries, Inc., Gaithersburg, Md.

Filed Sep. 10, 1979, Ser. No. 73,963
Int. Cl.[3] G06F *15/20*; G01N *21/00*; G01J *3/48*
U.S. Cl. 364—498 **7 Claims**

1. An apparatus for near infrared quantitative analysis comprising:

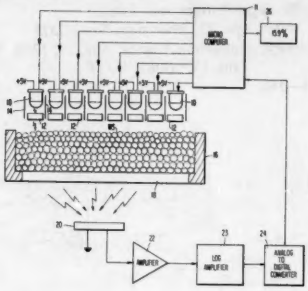
a plurality of pulsed infrared emitting diodes (IREDs) of specific one-half power bandwidth;

means for providing pulses to control the on off status of the IREDs;

a highly sensitive infrared detector positioned to receive infrared energy reflected or transmitted through a sample;

a plurality of stationary bandpass filters each selected to allow passage of a preselected wavelength band through it, which selected band is outside the one-half power bandwidth of the IRED, each of the said bandpass filters

positioned between each of the said IREDs and the infrared detector;



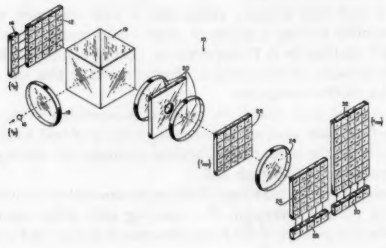
means for preforming the said quantitative analysis based on the energy received by said infrared detector.

4,286,328

INCOHERENT OPTICAL AMBIGUITY FUNCTION GENERATOR

Richard P. Bocker, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1978, Ser. No. 949,328
Int. Cl.[3] G06G *7/195, 9/00*
U.S. Cl. 364—851 **12 Claims**



1. An electro-optical system for computing the mathematical function of the discrete sample form

$$x_{mn} = \sum_{p=-L}^{+L} s_p s_{p-m} f_{pn}$$

where $\{s_p\}$ and $\{x_{mn}\}$ are sets of numbers representing sampled values of the functions s(t) and x(τ,w), respectively comprising:

a photo-responsive programmable mask for storing said sampled values of $\{s_p\}$ of the signal s(t);

a light source positioned to illuminate said photo-responsive programmable mask;

said light source being responsive to input signals for temporally modulating the intensity of the output of said light source as a function of the said values $\{s_p\}$;

a photographically recorded mask having encoded thereon information representative of the values $\{f_{pn}\}$;

an imaging lens positioned for transmitting light radiated by said photographically recorded mask;

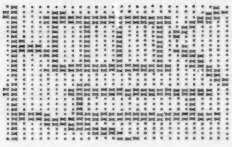
a photo-sensor array positioned to be illuminated by the irradiance from said imaging lens.

4,286,329

COMPLEX CHARACTER GENERATOR

Gerald Goertzel, White Plains; Carl G. Powell, Putnam Valley, and Samuel C. Tseng, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,342
Int. Cl.[3] G06F *3/14, 3/12;* **G09G** *3/00*
U.S. Cl. 364—900 **6 Claims**



1. In character generating apparatus, a method of generating characters in a complex character set on a utilization device, with each character in said complex character set being described by an original m by n element matrix, where m and n are integers which may or may not be equal, said method comprising the steps of:

defining in terms of elements, three groups of different patterns which occur frequently in said complex character set, namely, a first group which has a fixed size for each pattern, a second group which has one size parameter which must be specified for each pattern, and a third group which has a plurality of size parameters which must be specified for each pattern;

assigning a different symbol to represent each one of said different patterns;

defining a sparse m by n character matrix for each character in said complex character set in terms of the combination of symbols assigned to represent the combination of patterns defining the corresponding original character matrix, with at least certain ones of said characters having elements of different patterns which overlap, such that the elements that overlap are generated for each pattern of which they form a part, with each symbol being positioned in the sparse matrix where a predetermined one of the elements forming the pattern defined by that symbol is positioned in the original character matrix;

storing in binary form in a storage device each sparse matrix representation in said complex character set as a compacted character, with the binary information stored for each compacted character being: (a) the symbols in the sparse matrix, (b) the positions of the symbols in the sparse matrix, and (c) the size parameters of the pattern represented by the symbol, if the symbol is in said second or third group of patterns; and

generating on said utilization device a given complex character in response to retrieving and decoding the binary information stored which defines the corresponding compacted complex character, with the elements that overlap patterns being generated for each pattern of which they form a part.

4,286,330

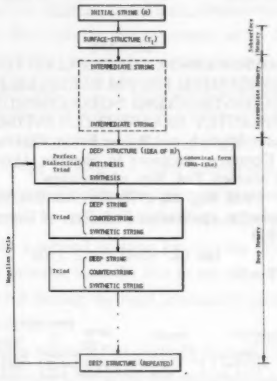
AUTONOMIC STRING-MANIPULATION SYSTEM

Joel D. Isaacson, 7370 Stratford Ave., University City, Mo. 63130

Continuation of Ser. No. 674,658, Apr. 7, 1976. This application Apr. 26, 1979, Ser. No. 33,623

Int. Cl.³ G06F *7/04*; G06K *9/00*

U.S. Cl. 364—900 **10 Claims**



1. In data processing apparatus, the method of manipulating a physical representation of a finite string, including storing the resulting recurrent cycle of strings, which comprises:

(a) interfacing said representation of said string with said apparatus; and

(b) hegelizing the interfaced representation of said string so as to generate and store in said apparatus the resulting recurrent cycle of strings for a finite duration.

Also, please enter the following corrections by amendment in the above mentioned application.

4,286,331

MONITORING AND SIGNALLING SYSTEM INCLUDING APPARATUS FOR PROCESSING AND ANALYZING SIGNALS PRODUCED BY ACTIVITY MONITORING SENSORS

Richard W. Anderson, Reading; Martin L. Resnick, Chestnut Hill, and J. Edward Schlener, Winchester, all of Mass., assignors to GTE Products Corp., Stamford, Conn. and GTE Laboratories Inc., Waltham, Mass.

Filed Nov. 14, 1979, Ser. No. 94,018

Int. Cl.³ G06F *3/05*

U.S. Cl. 364—900 **15 Claims**

1. In a monitoring and signalling system, apparatus comprising:

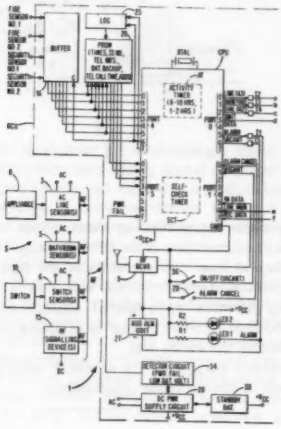
first sensor means operative to monitor the occurrence of predetermined first and second associated activities and in response to monitoring the occurrence of either associated activity to produce a signal indicative of the occurrence of the activity, said signal including data specifying the particular activity monitored by the first sensor means and identifying the first sensor means;

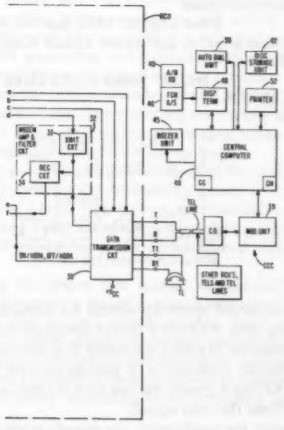
second sensor means operative to monitor the occurrence of a predetermined associated activity and in response to monitoring the occurrence of the activity to produce a signal indicative of the occurrence of the activity, said signal including data identifying the second sensor means;

processing means operative to receive and process signals produced by the first sensor means and the second sensor means, said processing means comprising:

activity timer means for receiving therein either a first count or a second count;

analyzing means arranged to analyze the activity and sensor identification data in signals received by the processing means from the first and second sensor means to determine the origin of the signals and the particular monitored activities, said analyzing means being operative for each signal identifying the first sensor means and specifying the occurrence of the first associated activity to cause a first count to be placed in the activity timer means, and operative for each signal identifying the first sensor means and specifying the occurrence of the second associated activity or for each signal identifying the second sensor means to cause a second count to be placed in the activity timer means; and





means operative if after a first count has been caused to be placed in the activity timer means as a result of the occurrence of the first activity monitored by the first sensor means and before the occurrence of the second activity monitored by the first sensor means the second sensor means monitors the occurrence of its associated activity and produces a corresponding signal to prevent a second count from being placed in the activity timer means to replace the first count caused to be placed therein as a result of the occurrence of the first activity monitored by the first sensor means.

4,286,332
METHOD AND APPARATUS FOR PRODUCING SHEAR WAVES FOR SUBSURFACE GEOPHYSICAL INVESTIGATION

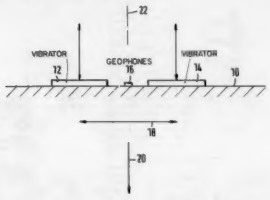
Hans A. K. Edelmann, Hanover, Fed. Rep. of Germany, assignor to Prakla-Seismos GmbH, Fed. Rep. of Germany

Filed Aug. 7, 1979, Ser. No. 64,589

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835772

Int. Cl.[3] **G01V** *1/155*

U.S. Cl. 367—75 **7 Claims**



1. A process for producing shear waves in the earth for geophysical examination of the sub-soil comprising the steps of

providing at least two vibrators of the type usable for the production of compressional waves in the earth,

locating the vibrators in spaced, adjacent relationship with the bottom surfaces thereof in coupling contact with the surface of the earth, and

concurrently energizing the vibrators with identical sweep signals in counterphase relationship.

4,286,333
DATA TRANSMISSION

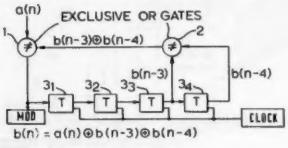
Donald P. Franklin, Wells, England, assignor to E M I Limited, Hayes, England

Filed Aug. 28, 1978, Ser. No. 937,521

Claims priority, application United Kingdom, Aug. 27, 1977, 36101/77

Int. Cl.[3] **H04B** *15/00;* **H04K** *1/04*

U.S. Cl. 375—1 **11 Claims**



1. A spread spectrum system for transmitting and receiving binary data, wherein a spread spectrum transmitter includes:

means for deriving according to a first predetermined recurrence relationship a pseudo-random binary pulse train having a greater bit rate than the data signal at least in part from the data signal;

means for modulating the pseudo-random pulse train with the data signal to produce an increased bandwidth signal; and

means to phase shift key modulate a coherent RF carrier with the increased bandwidth signal to produce a spread spectrum signal;

and wherein a spread spectrum receiver includes:

an input for receiving the spread spectrum signal;

delay line sections coupled to the input and at least one balanced modulator for combining signals subject to different delays in the delay line sections according to a second predetermined recurrence relationship, the said first second predetermined relationships being such that the delay line sections and at least one balanced modulator derive the said pseudo-random binary pulse train only from the spread spectrum signal, and

a further balanced modulator having a first input coupled to the said input for receiving the spread spectrum signal and a second input coupled to receive the said pseudo-random binary pulse train derived from the spread spectrum signal to cross-correlate that pulse train with the signal received at the first input to produce a signal comprising the data demodulated from the pseudo-random binary pulse train.

4,286,334
MICROPROCESSOR CONTROLLED ITERATIVE SWITCHING FM/PM RECEIVER FOR RECONSTRUCTING NOISE-CORRUPTED REDUNDANTLY TRANSMITTED INFORMATION

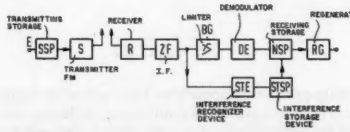
Josef Gammel, Munich, and Rainer Fulda, Olching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 18, 1978, Ser. No. 934,950

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1977, 2738800

Int. Cl.[3] **H04L** *1/02, 1/08*

U.S. Cl. 375—40 **5 Claims**



1. The method of transmitting redundant binary coded data information comprising the steps of: frequency or phase modulating said data on a carrier signal and radiating said signal at least twice with time diversity, receiving and detecting said modulated carrier signal, recognizing times of interference in said detected signal by determining amplitude variations, storing said times of interference, frequency or phase demodulating said received detected signal, storing said demodulated signal, and reconstructing said data from said stored demodulated signal by using said stored times of interference.

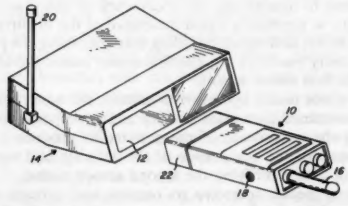
4,286,335
COAXIAL DUAL ANTENNA CONNECTION ARRANGEMENT FOR COMMUNICATIONS APPARATUS

Jerry H. Eichler, Boca Raton, and Bernard Gasparaitis, Fort Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 8, 1979, Ser. No. 92,597

Int. Cl.[3] **H04B** *1/38, 1/08;* **H01O** *1/24*

U.S. Cl. 455—89 **5 Claims**



1. An interconnection arrangement as for ultra high frequency communications apparatus containing radio circuitry, the arrangement comprising in combination:

a housing formed of an insulating material and having at least first and second apertures in the walls thereof;

a coaxial switch/connector retained within the insulating housing and including a conductive housing member having first and second apertures aligned with the first and second apertures respectively of the insulating housing, an insulating sleeve member retained within the conductive housing member and having first and second apertures aligned with the first and second apertures respectively of the conductive housing, a resilient conductive member retained by the insulating sleeve member with a first movable portion within the conductive housing and a second portion projecting from the conductive housing, the first portion having first and second positions, and in both positions being approximately axially aligned in the conductive housing member, a rigid conductive member movably supported within the sleeve member and having a first position in contact with the conductive housing member and a second position for moving the resilient conductive member from the first to the second position, and means for biasing the rigid conductive member into the first position;

a coaxial antenna having a first centrally located conductive element positioned to enter the insulating housing through the first aperture therein for coupling to the resilient conductive member when in the first position, and a second conductive outer element spaced from the first element and coupled to the conductive housing member adjacent the first aperture therein;

a first coaxial cable having a first centrally positioned conductive element for coupling the radio circuitry to the second portion of the resilient conductive member of the coaxial connector, and a second, outer conductive element spaced apart from the first element and coupled to the conductive housing member; and

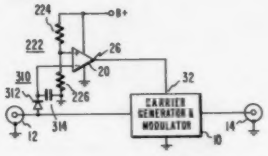
a second coaxial cable for coupling signals from a second antenna to the radio circuitry and having a first centrally located conductive element adapted to be aligned with the second aperture of the insulating housing for contacting and moving the rigid conductive member of the coaxial connector from the first to the second position, disconnecting the centrally located element of the coaxial antenna from the resilient conductive member, and a second, outer conductive element spaced apart from the first element and coupled to the conductive housing member of the coaxial connector.

4,286,336

AUTOMATIC SHUTDOWN ARRANGEMENT FOR STAND-ALONE TELEVISION MODULATOR

Robert F. Sanford, Titusville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,485
Int. Cl.³ H04B *1/04*
U.S. Cl. 455—117 **4 Claims**



1. A stand-alone modulator for modulating a signal carrier with a video information modulating signal obtained from a selected video signal source and applied to a modulating signal input terminal capable of being connected to any one of a plurality of video signal sources, including overmodulation protection circuitry, comprising:

a source of energizing potential;

carrier generating and modulating means coupled to said modulating signal input terminal for generating said signal carrier and modulating said signal carrier in response to variations in the amplitude of said video information modulating signal obtained from said selected one signal source, said carrier generating and modulating means when energized by said energizing potential capable of being operated in an overmodulated condition to overmodulate said signal carrier when the amplitude of said video information modulating signal exceeds a predetermined overmodulation level;

comparator means having first and second switching states, said comparator means being coupled to said source of energizing potential and having an output terminal coupled to said carrier generating and modulating means for applying said energizing potential to at least a portion of said carrier generating and modulating means when said comparator means is in said first switching state when said amplitude of said video information modulating signal is below said predetermined overmodulation level;

means for developing a voltage representative of the amplitude of said video information modulating signal;

means for developing a reference voltage representative of an amplitude of said video information modulating signal that is capable of producing said overmodulated condition; and

means for applying the above two recited representative voltages to said comparator means to switch said comparator means into said second switching state upon the occurrence of said overmodulated condition, said comparator means removing energizing potential from said carrier generating and modulating means when in said second switching state, thereby providing overmodulation protection.

DESIGN PATENTS

GRANTED AUG. 25, 1981

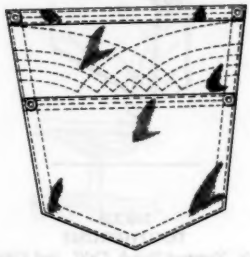
ERRATA

For CLASS	See PATENT NO.
D03–073	260,327
D04–025	260,328

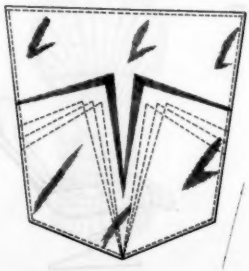
DESIGNS

AUGUST 25, 1981

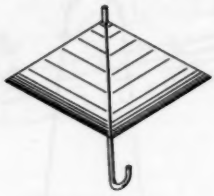
260,320
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Jan. 29, 1980, Ser. No. 116,424
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28



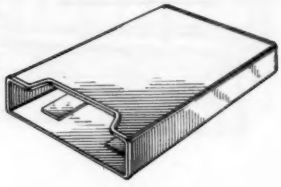
260,321
POCKET FOR JEANS OR THE LIKE
Martin Heinfling, Bayside, N.Y., assignor to Englishtown Sportswear, Ltd., New York, N.Y.
Filed Apr. 11, 1980, Ser. No. 139,602
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28



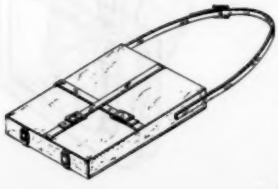
260,322
UMBRELLA
James W. Williams, 652 Lynn Fells Pkwy., Melrose, Mass. 02176
Filed Apr. 26, 1979, Ser. No. 33,468
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—5



260,323
FICHE POCKET
Allen E. Johnson, Hartford, Wis., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jun. 11, 1979, Ser. No. 47,415
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35

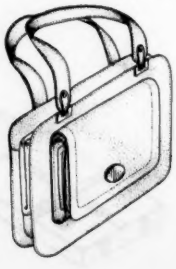


260,324
CARRYING CASE FOR ARTISTS' MATERIALS OR THE LIKE
Thomas Koves, 645 N. Cherokee Ave., Los Angeles, Calif. 90004
Filed Sep. 18, 1979, Ser. No. 76,593
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—42



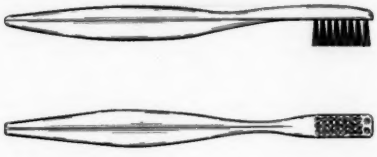
260,325
PURSE
Josie M. Davis, 2125 N. 19th St., #4, Baton Rouge, La. 70802
Filed Sep. 4, 1979, Ser. No. 72,502
Term of patent 3½ years
Int. Cl. D3—*01*
U.S. Cl. D3—44

260,326
HANDBAG
Milton I. Siegel, Scottsdale, Ariz., assignor to Amba Marketing Systems, Inc., Tempe, Ariz.
Filed Sep. 18, 1978, Ser. No. 943,438
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—48



260,327
TOTE BAG
Harold Rabinowitz, Midlothian, and Maria I. Zappia, Mechanicsville, both of Va., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 19, 1979, Ser. No. 31,563
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—73

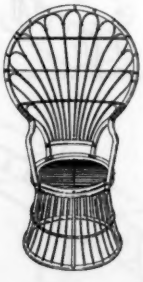
260,328
TOOTHBRUSH
Gerald C. Neely, Newport Beach, Calif., and Kiyoshi Maekawa, Takatsuki, Japan, assignors to Sunstar, Inc., Newport Beach, Calif.
Filed Nov. 26, 1979, Ser. No. 93,930
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



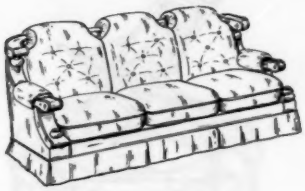
260,329
CHAIR
Hans Ehrlin, Sjöstugan, Hätte, and Christian Haggstam, Sockenstugan, Kyrkskolan, both of Tranas, Sweden (S-573 00)
Continuation-in-part of Ser. No. 925,317, Jul. 17, 1978, abandoned. This application Sep. 18, 1978, Ser. No. 944,597
Claims priority, application Sweden, Jan. 16, 1978, 780119
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—27

260,330
CHAIR OR SIMILAR ARTICLE
Fred Ruf, Arlesheim, Switzerland, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland
Division of Ser. No. 714,956, Aug. 16, 1976, Pat. No. D. 249,303.
This application Apr. 24, 1978, Ser. No. 899,280
Claims priority, application Switzerland, Mar. 23, 1976, 62766/76
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30

260,331
DECORATIVE CHAIR
Jose S. Orosa, 25 McKinley Rd., Forbes Park, Makati, Metro Manila, Philippines
Filed Mar. 2, 1979, Ser. No. 16,748
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



260,332
SEAT OR SIMILAR ARTICLE
Stanley P. Nash, Johnson Creek, Wis., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed May 15, 1978, Ser. No. 906,138
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62

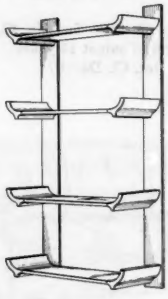


260,333
SEAT OR SIMILAR ARTICLE
Randy R. Culler, High Point, N.C., assignor to Kroehler Mfg. Co., Naperville, Ill.
Filed May 25, 1979, Ser. No. 42,567
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

260,334
CHAIR
Robert L. Van Horn, 8165 University Blvd., Des Moines, Iowa 50311
Filed Sep. 12, 1978, Ser. No. 941,725
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—65

260,335
CHAIR
Andrew Y. Thomas, 451 S. Bailey Rd., Northport, Mich. 49670
Filed Nov. 6, 1978, Ser. No. 958,110
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70

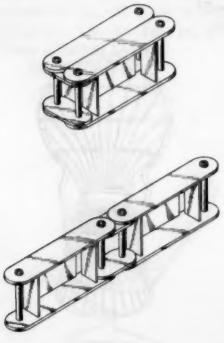
260,336
WALL MOUNTED SHELF UNIT
Karl Springer, 425 E. 58th St., New York, N.Y. 10022
Filed Feb. 6, 1979, Ser. No. 9,773
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—134



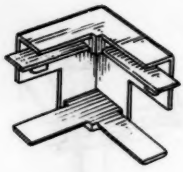
260,337
WINE BOTTLE DISPLAY BIN
Dennis M. Thompson, Fairfax, Calif., assignor to San Martin Winery, San Martin, Calif.
Filed Jan. 21, 1980, Ser. No. 113,496
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—153

260,338
MACRAME POLE
Richard Savage, 3089 Bay Plz., Saginaw, Mich. 48603
Filed Jul. 14, 1978, Ser. No. 924,877
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—176

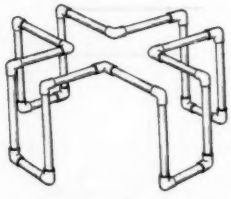
260,339
STORAGE UNIT
Keiichi Yoshizawa, Chiba, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Dec. 6, 1978, Ser. No. 966,957
Claims priority, application Japan, Jun. 8, 1978, 53-23527
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



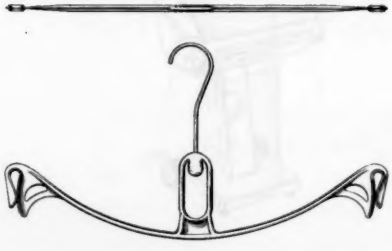
260,340
CORNER CONNECTOR FOR A TRAY OR SIMILAR ARTICLE
Terence Hardy, Nether Heage, England, assignor to L.B. (Plastics) Limited, Derby, England
Filed Dec. 20, 1978, Ser. No. 971,328
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



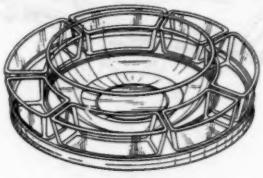
260,341
TABLE BASE
Penelope J. Harrison, 4747 Kester Ave., Apt. 107, Sherman Oaks, Calif. 91403
Filed Apr. 6, 1979, Ser. No. 28,062
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196



260,342
HANGER
Stanley Eiley, Mount Royal, and Joseph Akerman, Ville St. Laurent, both of Canada, assignors to ERA Display Co. Ltd., Montreal, Canada
Filed Feb. 13, 1979, Ser. No. 11,898
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—252



260,343
ROTATABLE FOOD SERVING ASSEMBLY
Joseph W. Blake, South Salem, N.Y.; Richard H. Corbin, Westport, and Peggy P. Neale, Bridgeport, both of Conn., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jun. 22, 1979, Ser. No. 51,278
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—2



260,344
TUMBLER
Edgar F. Trombly, Grosse Pointe Farms, Mich., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 13, 1979, Ser. No. 29,817
Term of patent 14 years
The portion of the term of this patent subsequent to Oct. 6, 1998 is disclaimed.
Int. Cl. D07—*01*
U.S. Cl. D7—15

260,345

TRAY OR SIMILAR ARTICLE

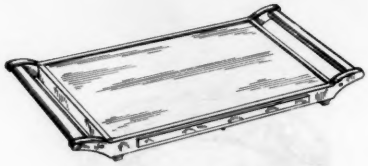
Gordon W. Goodrich, Grand Rapids, Mich., assignor to Bissell, Inc., Grand Rapids, Mich.

Filed May 14, 1979, Ser. No. 38,497

Term of patent 14 years

Int. Cl. D07—*99*

U.S. Cl. D7—21



260,346

SALAD SPINNER

Sam Lebowitz, New York, N.Y., assignor to Copco, Inc., New York, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,256

Term of patent 14 years

Int. Cl. D07—*04*

U.S. Cl. D7—47

260,347

BARBECUE GRILL

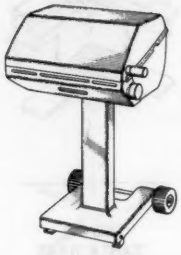
Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 18, 1980, Ser. No. 131,418

Term of patent 14 years

Int. Cl. D7—*02*

U.S. Cl. D7—108



260,348

BARBECUE GRILL

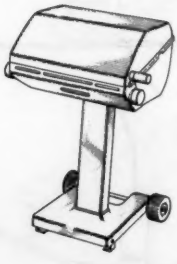
Orville W. Larson, Elmhurst, Ill., assignor to Beatrice Foods Co., Bristol, Wis.

Filed Mar. 20, 1980, Ser. No. 132,288

Term of patent 14 years

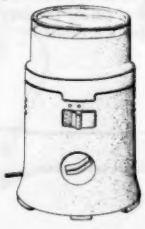
Int. Cl. D7—*02*

U.S. Cl. D7—108

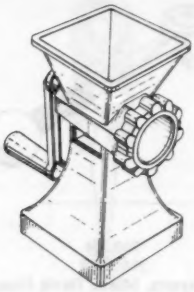


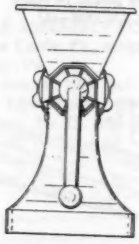
260,349
KNIFE OR SIMILAR ARTICLE OF FLATWARE
Clark L. Lofgren, Taunton, Mass., assignor to Reed & Barton Corporation, Taunton, Mass.
Filed Aug. 13, 1979, Ser. No. 65,949
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137

260,350
ELECTRIC FOOD BLENDER
Hartwig Kahlcke, Bad Soden, Fed. Rep. of Germany, assignor to Braun AG, Frankfurt am Main, Fed. Rep. of Germany
Filed May 17, 1979, Ser. No. 39,640
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 73MR8760
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—154

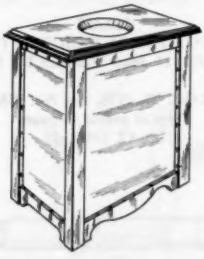


260,351
FOOD CHOPPER
So Shun, 77, Hoi Yuen Rd., Flat B, 2nd Flr., Yip Fat Industrial Bldg., Kwun Tong, Kowloon, Hong Kong
Filed Mar. 12, 1979, Ser. No. 19,489
Claims priority, application United Kingdom, Feb. 26, 1979, 988727/79
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—155



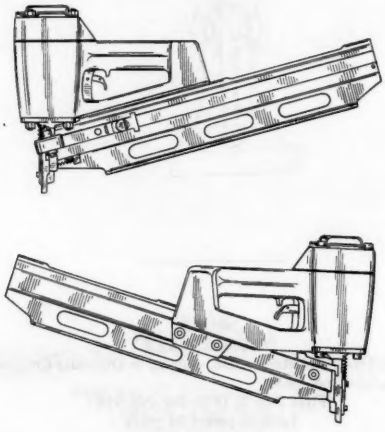


260,352
WASTE BASKET
John W. Damon, Holland, Ohio, assignor to Outhouse Creations Corp., Holland, Ohio
Filed Jan. 2, 1979, Ser. No. 916
Term of patent 14 years
Int. Cl. D07—*05*; D06—*04*
U.S. Cl. D7—194



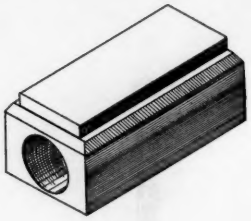
260,353
HAND TOOL OR SIMILAR APPARATUS
Samuel A. Redman, Dallas, Tex., assignor to Texas Novachem Corporation, Dallas, Tex.
Filed Sep. 11, 1978, Ser. No. 941,417
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—25

260,354
NAILER
Richard Proops, Wayzata, Minn.; David Haas, Norwalk, and John Cuccio, Westport, both of Conn., assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed Jun. 19, 1978, Ser. No. 917,001
Term of patent 14 years
Int. Cl. D08—*02*
U.S. Cl. D8—61

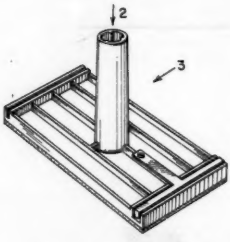


260,355
ADAPTOR FOR MOTORIZED TOOLS
Charles H. Buzzell, 613 John Marshall Dr. NE., Vienna, Va. 22180
Filed Oct. 27, 1978, Ser. No. 955,247
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—70

260,356
HONING KIT
Richard L. Hall, Rte. #1, Box 522, Pearcy, Ark. 71964
Filed Jul. 7, 1978, Ser. No. 923,048
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—91



260,357
SANDPAPER HOLDER
William B. Brannan, 1318 White Oak Cir., Ojai, Calif. 93023
Filed Mar. 26, 1979, Ser. No. 23,840
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—94



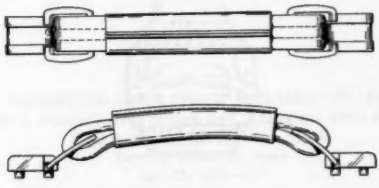
260,358
ROOFING MATERIAL CUTTER
Dale J. Wilson, 1205 Acacia Ave., Sacramento, Calif. 95815, and William F. Birney, 2859 Carmine St., Carson City, Nev. 89701
Filed May 2, 1979, Ser. No. 35,284
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—98

260,359
TOOL HANDLE
Morley L. Smith, Beaconsfield, Canada, assignor to T. S. Simms & Co. Limited, Saint John, Canada
Filed Feb. 16, 1979, Ser. No. 12,840
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—107

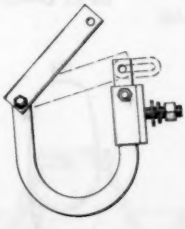
260,360
DOOR HANDLE AND LOCK SET
Edward H. Meisner, Wyckoff, N.J., assignor to Scovill Inc., Waterbury, Conn.
Filed Jun. 26, 1978, Ser. No. 919,017
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—301

260,361
DOOR HANDLE AND LOCK UNIT
Edward H. Meisner, Wyckoff, N.J., assignor to Scovill Inc., Waterbury, Conn.
Filed Jun. 26, 1978, Ser. No. 919,018
Term of patent 14 years
Int. Cl. D8—*06, 07*
U.S. Cl. D8—301

260,362
HANDLE ASSEMBLY FOR LUGGAGE
Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed May 30, 1978, Ser. No. 910,460
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—306



260,363
COMBINED BRACKET AND LOCKING HOOK UNIT FOR HOLDING TRUCK TIRE CHAINS
Donald G. Gipson, 221 Manzanita Ave., Red Bluff, Calif. 96080
Filed Jan. 2, 1979, Ser. No. 660
Term of patent 14 years
Int. Cl. D8—*07*; D12—*16*
U.S. Cl. D8—333



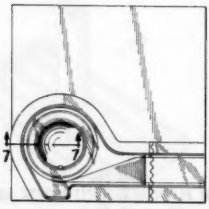
260,364
FESTOON HOLDER
Stanley Kleiman, 15 Parson Pl., Colonia, N.J. 07067
Filed Mar. 12, 1979, Ser. No. 19,742
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—363

260,365
COMBINED DECANTER AND STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Sep. 13, 1978, Ser. No. 942,015
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378

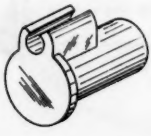
260,366
BOTTLE
Edwin F. Neu, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 17, 1979, Ser. No. 40,011
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—403

260,367
BOTTLE
John A. Grip, Cheesequake, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Filed May 10, 1978, Ser. No. 904,679
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—413

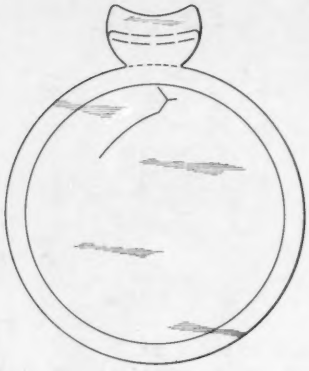
260,368
TAPE PACKAGE
Wayne K. Dunshee, Maplewood, and Thomas J. Watkins, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 8, 1979, Ser. No. 46,994
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415

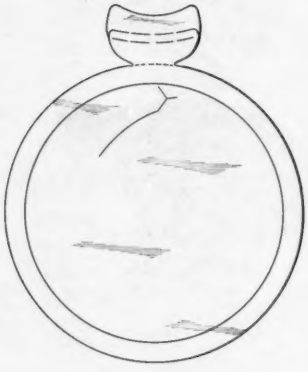


260,369
CAP
Richard C. Massey, 12301 Ballas La., St. Louis, Mo. 63131
Filed Sep. 20, 1978, Ser. No. 945,179
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—436

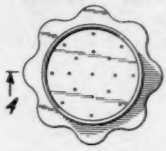


260,370
POPCORN CONTAINER LID
David S. Peterson, Oak Lawn, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed May 10, 1979, Ser. No. 38,004
Term of patent 14 years
Int. Cl. D09—99
U.S. Cl. D9—436

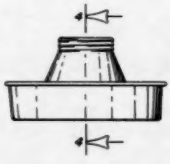




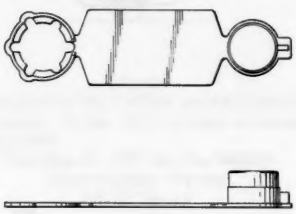
260,371
BAIT CAN COVER
Bernard C. Imm, 116 E. Third St., Blue Earth, Minn. 56013
Filed Aug. 31, 1979, Ser. No. 71,751
Term of patent 14 years
Int. Cl. D09—99
U.S. Cl. D9—452



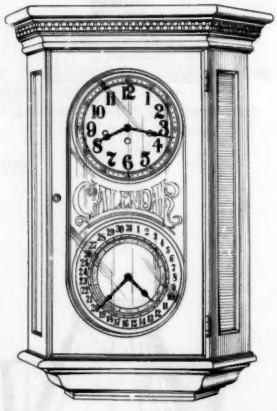
260,372
COMBINED POUR SPOUT AND DRIP GUARD
Carlo A. Fantozzi, 1515 Wilson Ave., Columbus, Ohio 43207
Filed Apr. 23, 1979, Ser. No. 32,463
Term of patent 14 years
Int. Cl. D09—07
U.S. Cl. D9—436



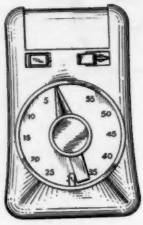
260,373
CAPTIVE SANITARY CAP FOR A BEVERAGE TANK VALVE
Arthur A. Wood, Greenville, Ohio, assignor to Replicap Products, Inc., Greenville, Ohio
Filed Apr. 20, 1979, Ser. No. 31,752
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—446



260,374
CALENDAR CLOCK
Arthur Umanoff, Ardsley, N.Y., assignor to Howard Miller Clock Company, Zeeland, Mich.
Filed Feb. 5, 1979, Ser. No. 9,510
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—3



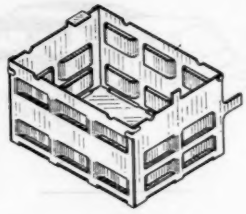
260,375
TIMER
Earl B. Kane, Stamford, Conn., and Edward Sollenberger, Triadelphia, W. Va., assignors to Empire of Carolina, Inc., New York, N.Y.
Filed Feb. 9, 1979, Ser. No. 11,011
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



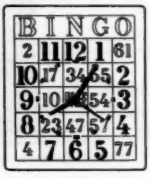
260,376
POSTAGE SCALE
Edward Lawing, Columbus, Ohio, assignor to Reliance Electric Co., Cleveland, Ohio
Filed Aug. 30, 1979, Ser. No. 71,315
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91

260,377
WEIGHT SCALE
Edward Lawing, Columbus, Ohio, assignor to Reliance Electric Co., Cleveland, Ohio
Filed Aug. 30, 1979, Ser. No. 71,396
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91

260,378
IONIZATION CHAMBER FOR AN ELECTRONIC SMOKE DETECTOR
John Mallory, Toronto, Canada, assignor to Isotec Industries Limited, Toronto, Canada
Filed Nov. 2, 1978, Ser. No. 957,240
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—104

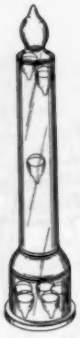


260,379
COMBINED ALARM CLOCK FACE AND HANDS
Frank S. Tkac, 619 Brighton Ave., Reading, Pa. 19606
Filed Jun. 28, 1979, Ser. No. 52,912
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

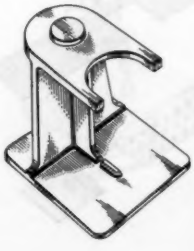


260,380
PENDANT
Ralph T. Dickerson, 2439 Deodar Rd., Pomona, Calif. 91766
Filed Sep. 17, 1979, Ser. No. 76,273
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—81

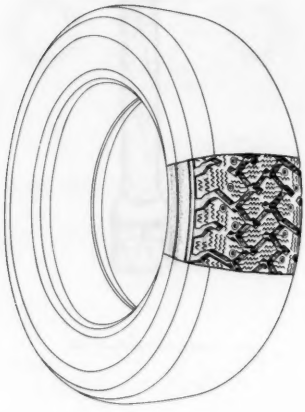
260,381
THERMOSCOPE
M. Wayne Adkins, 1802 Glenwood Dr., Stillwater, Okla. 74074
Filed Jun. 15, 1979, Ser. No. 48,948
Term of patent 14 years
Int. Cl. D11—*99*
U.S. Cl. D11—121



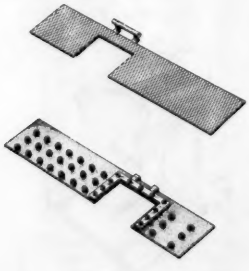
260,382
TRAILER JACK FOOT
Hugh M. Williams, 34 NE. 37, Oklahoma City, Okla. 73105
Filed Mar. 22, 1979, Ser. No. 22,912
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55



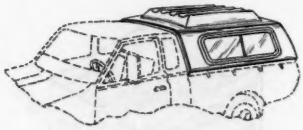
260,383
TIRE
Andre Debrauwer, and Michel R. de Saint Michel, both of Clermont-Ferrand, France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Mar. 26, 1979, Ser. No. 24,075
Claims priority, application France, Sep. 25, 1978, 571
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



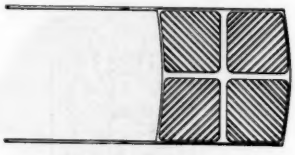
260,384
TRACTION MAT FOR USE WITH VEHICLE WHEELS
Jan Jurusz, 37 Lorrigan Pl., and John Zatorski, 18 Park Ave., both of North Arlington, N.J. 07032
Filed Apr. 16, 1979, Ser. No. 30,349
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—154



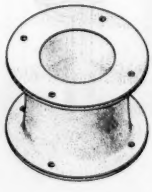
260,385
CAP FOR THE BED OF A PICKUP TRUCK
Donald L. Munoz, Warren, Mich., assignor to Thermoplastics Incorporated, Warren, Mich.
Filed Dec. 7, 1978, Ser. No. 967,229
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156



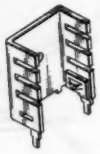
260,386
MOTORCYCLE LUGGAGE RACK
Robert E. Palmer, Los Angeles; Ytzhak I. Gewelber, and William D. Lockhart, both of Cerritos, all of Calif., assignors to Lockhart Industries, Inc., Paramount, Calif.
Filed Apr. 23, 1979, Ser. No. 32,164
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—158



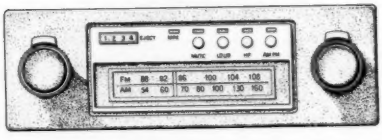
260,387
DOCK FENDER
Yuji Fukuda, Yokohama, and Shinichi Kajigaya, Yokosuka, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Dec. 7, 1978, Ser. No. 967,453
Claims priority, application Japan, Jun. 7, 1978, 53-23403
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—168



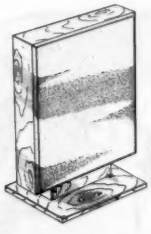
260,388
HEAT SINK OR SIMILAR APPARATUS
David H. Kennington, Highland Park, Tex., assignor to Thermalloy Incorporated, Dallas, Tex.
Filed Oct. 22, 1979, Ser. No. 86,633
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—23



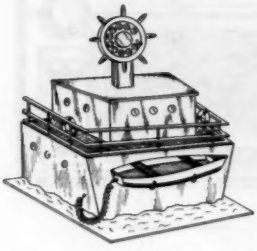
260,389
CONTROL UNIT FOR A COMBINED AUTOMOBILE CARTRIDGE PLAYER AND RADIO
John F. Castagna, Milford, Pa., and Ronald A. Emmerling, New City, N.N.Y., assignors to Sparkomatic Corporation, Milford, Pa.
Filed Oct. 15, 1979, Ser. No. 85,031
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—10



260,390
SPEAKER CABINET AND BASE
Jose J. Bertagni, 1 Coventry St., Newport Beach, Calif. 92660
Filed Jan. 2, 1979, Ser. No. 300
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

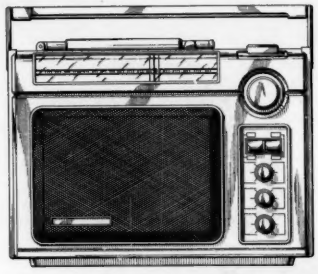


260,391
TELEPHONE
Wesley L. Thomas, 109 S. Catalina St., Los Angeles, Calif. 90004
Filed Jan. 29, 1979, Ser. No. 7,329
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

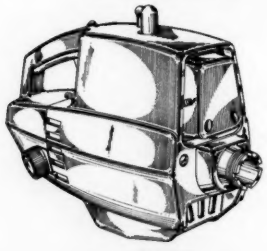


260,392
RADIO
Mark A. Muspratt-Williams, Kowloon, Hong Kong, assignor to Deacon & Co. Ltd., Kowloon, Hong Kong
Filed Jun. 5, 1978, Ser. No. 912,579
Claims priority, application United Kingdom, Jan. 3, 1978, 982816/78
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—69

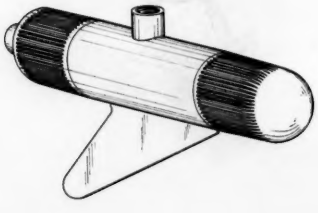
260,393
PORTABLE RADIO OR SIMILAR ARTICLE
George M. Buckler, Fayetteville, N.Y., assignor to General Electric Company, New York, N.Y.
Filed Apr. 25, 1979, Ser. No. 33,101
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70



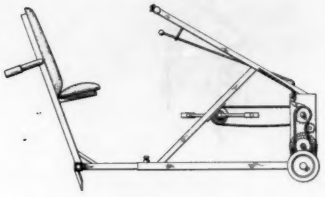
260,394
POWER HANDLE FOR LINE TRIMMER AND THE LIKE
Lloyd H. Tuggle, Shreveport, La., assignor to Beaird-Poulan Division of Emerson Electric, Shreveport, La.
Filed Sep. 18, 1978, Ser. No. 944,600
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—1

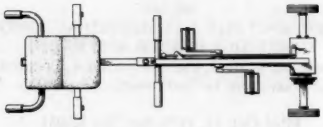


260,395
HOUSING FOR AN ELECTRIC OUTBOARD MOTOR
Chris S. Kappas, 5120 Darby Pl., Racine, Wis. 53401
Filed Mar. 23, 1979, Ser. No. 23,080
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D15—4

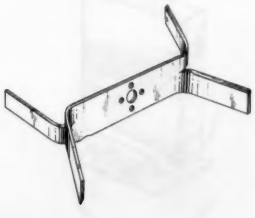


260,396
PEDAL OPERATED WINCH FOR GARDEN TOOLS
Keith Marks, Bethlehem, Pa., assignor to Rodale Press, Inc., Emmaus, Pa.
Filed Nov. 17, 1978, Ser. No. 961,560
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—10





260,397
BLADE FOR A CULTIVATOR
Robert L. Bartlett, Columbia, Mo., and Anthony Jacyno, Libertyville, Ill., assignors to Benchmark Tool Company, Vandalia, Ohio
Filed Nov. 6, 1978, Ser. No. 957,199
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—11

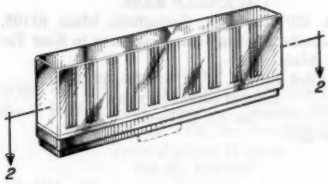


260,398

PHOTOFLASH LAMP UNIT

Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 25, 1978, Ser. No. 936,879
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

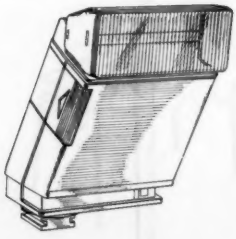


260,399

ELECTRONIC FLASH DEVICE

Peter T. Quinn, Littleton, Colo., assignor to Rollei of America, Littleton, Colo.

Filed Sep. 18, 1978, Ser. No. 943,344
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

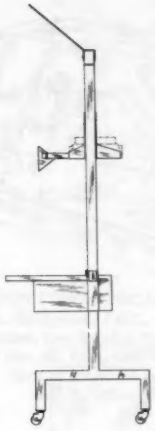


260,400

STAND FOR A SLIDE PROJECTOR OR THE LIKE

Thomas Carvel, Chauncey, N.Y., assignor to Carvel Corporation, Yonkers, N.Y.

Filed Aug. 1, 1978, Ser. No. 930,104
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—44

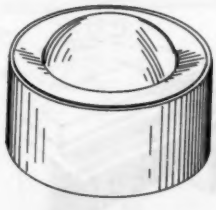


260,401

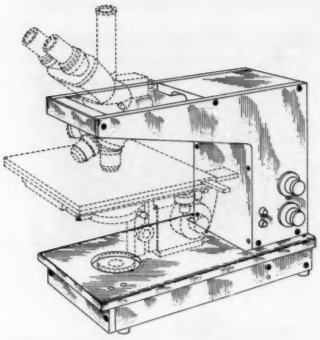
READING LIGHT MAGNIFIER, OR THE LIKE

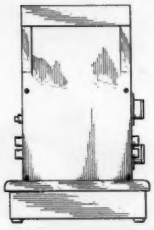
Norbert Leopoldi, 4180 Marine Dr., Chicago, Ill. 60613

Filed Nov. 20, 1978, Ser. No. 962,325
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—54



260,402
MICROSCOPE STAND
R. W. Hodgson, 1680 N. Vine St. #204, Hollywood, Calif. 90028
Filed Jun. 5, 1978, Ser. No. 912,931
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—58

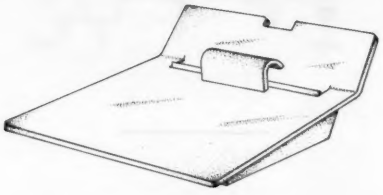




260,403
ELECTRIC PIANO, OR THE LIKE
Sadayoshi Karaki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Nov. 16, 1978, Ser. No. 961,233
Claims priority, application Japan, Jun. 1, 1978, 5322734
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—7

260,404
ELECTRIC GUITAR
H. Donald Gabriel, 339 Sussex Dr. NE., Cedar Rapids, Iowa 52402
Filed Feb. 21, 1979, Ser. No. 13,130
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—18

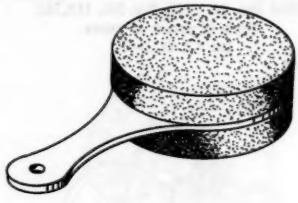
260,405
CALENDAR BASE
Kent Tarrant, 210 Maple St., Springfield, Mass. 01105, and Gregory Fossella, Boston, Mass., assignors to Kent Tarrant, Springfield, Mass.
Filed Jun. 21, 1979, Ser. No. 50,809
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D19—20



260,406
WRITING BRUSH OR SIMILAR ARTICLE
Kunio Itoh, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha (Pentel Co., Ltd.), Tokyo, Japan
Filed Jan. 14, 1980, Ser. No. 111,679
Claims priority, application Japan, Jul. 27, 1979, 54-31776
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—44

260,407
PEN CAP OR SIMILAR ARTICLE
Kunio Itoh, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha (Pentel Co., Ltd.), Tokyo, Japan
Filed Nov. 2, 1978, Ser. No. 956,902
Claims priority, application Japan, May 11, 1978, 53-19154
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—57

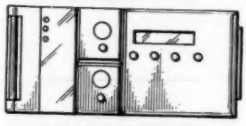
260,408
SOFT MATERIAL FACED DISCIPLINE PADDLE
Charles S. Ruffing, 5619 Cornell Rd., Haslett, Mich. 48840
Filed Aug. 22, 1979, Ser. No. 68,602
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—59



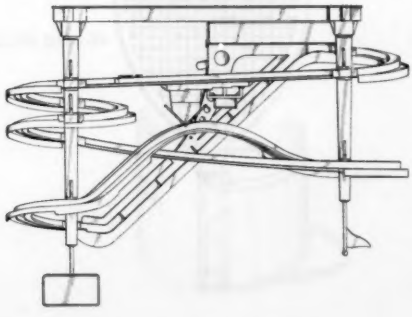
260,409
PINBALL MACHINE
Koichi Tanaka; Toshio Yamamoto, and Fumio Konuki, all of Nihonbashi, Japan, assignors to Kabushiki Kaisha Universal, Oyama, Japan
Filed Aug. 24, 1979, Ser. No. 69,500
Claims priority, application Japan, Feb. 28, 1979, 54-7570
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—10

260,410
SIMULATIVE KITE
Eiichi Nagase, 3-29 Yatsu Hts, 7-501 Narashino, Chiba, Japan, and Shuhei Goto, Niigata, Japan, assignors to Eiichi Nagase, Chiba, Japan
Filed Feb. 26, 1979, Ser. No. 15,315
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—83

260,411
TOY COMMUNICATOR
Richard M. Rubin, Hollywood, Calif., assignor to Paramount Pictures Corporation, Los Angeles, Calif.
Filed Apr. 10, 1979, Ser. No. 28,846
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—111

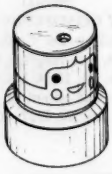


260,412
TOY TRACKWAY
Toru Hirano, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Mar. 20, 1979, Ser. No. 22,173
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143

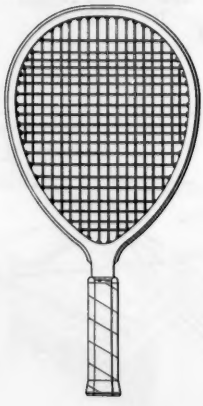


260,413
TOY AFRICAN LION
Patricia I. Holstine, 16 N. Main, Conrad, Mont. 59425
Filed May 10, 1978, Ser. No. 904,634
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—163

260,414
TOY FIGURE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Kenshun Ishii, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Jul. 25, 1979, Ser. No. 60,565
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—168

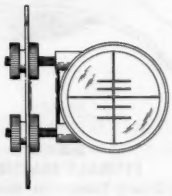


260,415
RACQUETBALL RACQUET
John R. Erwin, Paradise Valley, Ariz.; Anthony F. Staub, and Norman T. Staub, both of Dayton, Ohio, assignors to Starwin Industries, Inc., Dayton, Ohio
Filed Jan. 11, 1979, Ser. No. 2,713
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212

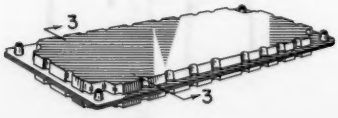


260,416
TENT
Eugene A. Criqui, 726 S. Brighton, and David A. Lester, 728 S. Brighton, both of Kansas City, Mo. 64124
Filed Feb. 7, 1980, Ser. No. 119,513
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253

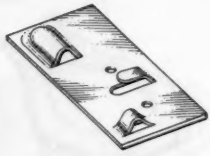
260,417
ARCHERY SIGHT
August E. Siekman, 6912 E. 66th St., Tulsa, Okla. 74133
Filed Jan. 14, 1980, Ser. No. 111,762
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—5



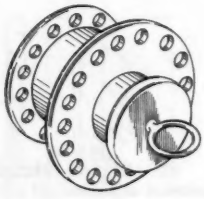
260,418
ADHESIVE TRAP FOR RODENTS
Stanley Z. Baker, Cuyahoga County, and Benjamin H. Baker, Geauga County, both of Ohio, assignors to J. T. Eaton & Company, Inc., Twinsburg, Ohio
Filed Jan. 30, 1980, Ser. No. 116,924
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18



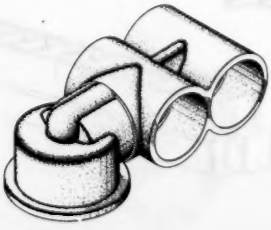
260,419
FISH STRINGER RETAINER
Raymond N. Oates, 1117 Lakeview Rd., Elgin, Ill. 60120
Filed Sep. 6, 1979, Ser. No. 73,063
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—22



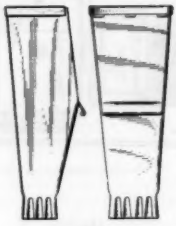
260,420
FISHING REEL FOR AMPUTEES
Robert Radocy, 2860 Pennsylvania Ave., Boulder, Colo. 80303
Filed Nov. 1, 1979, Ser. No. 90,352
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



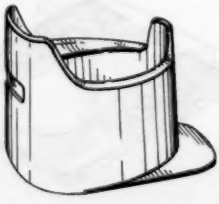
260,421
FITTING FOR SPAS AND THE LIKE
William W. Conger, IV, Los Osos, Calif., assignor to Conger Brothers Manufacturing Co., Inc., Garden Grove, Calif.
Filed Jan. 8, 1979, Ser. No. 1,966
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—40



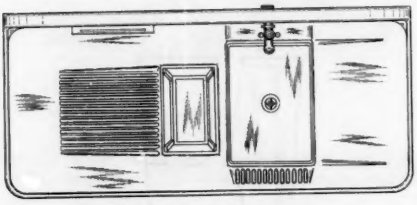
260,422
HOUSING FOR DOWNSPOUT STRAINER
Gary V. Husted, 835 E. Main St., East Aurora, N.Y. 14052
Filed Sep. 7, 1978, Ser. No. 940,490
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45

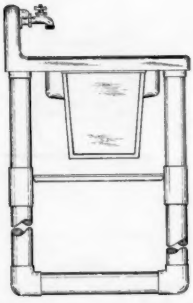


260,423
CHILDREN'S CHAMBER-POT
Hannele Helkama-Ragard, Helsinki, Finland, assignor to Oy Mk-Tuote AB, Helsinki, Finland
Filed Feb. 23, 1979, Ser. No. 14,723
Claims priority, application Finland, Sep. 15, 1978, 56178
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—53

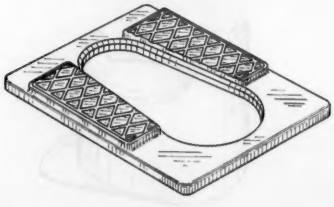


260,424
COMBINED SINK AND TABLE
Albert L. Kinsey, 10810 Burbank Dr., Potomac, Md. 20854, and James H. Kinsey, 11917 Wilhide Rd., Thurmont, Md. 21788
Filed Jun. 12, 1979, Ser. No. 47,671
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—61

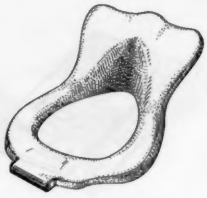




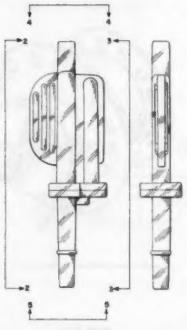
260,425
TOP FOR A FLOOR TOILET
Leon J. Maciukiewicz, Erie, Pa., assignor to Zurn Industries, Inc., Erie, Pa.
Filed Mar. 9, 1979, Ser. No. 19,009
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



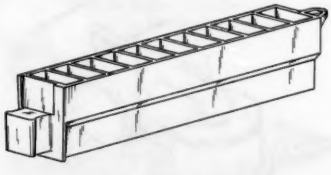
260,426
TOILET SEAT ACCESSORY
Willie Hempstead, 4017 Adair St., #1, Los Angeles, Calif. 90011
Filed Feb. 25, 1980, Ser. No. 124,171
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



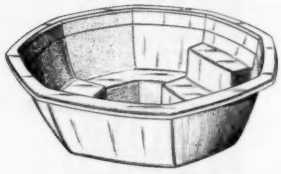
260,427
OVERPRESSURE DEVICE
Lee E. McGill, Orinda, and Susan J. Watkins, Berkeley, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.
Filed Mar. 26, 1979, Ser. No. 23,926
Term of patent 14 years
Int. Cl. D24—*01, 02*
U.S. Cl. D24—8



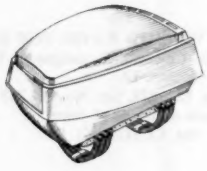
260,428
CUVETTE ARRAY OR THE LIKE
Nicholas M. G. Fekete, Richardson, Tex., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Mar. 15, 1979, Ser. No. 20,551
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29

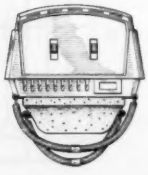


260,429
HYDROTHERAPY SPA
Dean W. Myers, 703 W. Washington, Santa Ana, Calif. 92706
Filed Jul. 9, 1979, Ser. No. 56,055
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—38

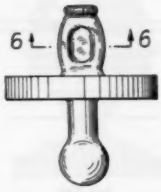


260,430
HAND HELD MASSAGER
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Dec. 4, 1978, Ser. No. 965,772
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—41





260,431
BABY SOOTHER
Eric K. Hurst, London, England, assignor to Lewis Woolf Griptight Limited, Birmingham, England
Filed Aug. 1, 1978, Ser. No. 929,975
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—46

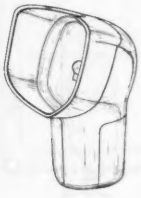


260,432
COMBINED STAND AND CONTAINER FOR STORING LIQUIDS
Gabor Kadar, 4635 White Oak Ave., Encino, Calif. 91316
Filed Nov. 13, 1978, Ser. No. 960,290
Term of patent 14 years
Int. Cl. D24—*52*
U.S. Cl. D24—52

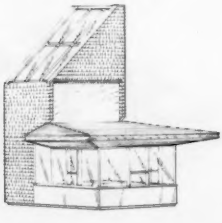
260,433
WOUND DRAINAGE BOTTLE
Patricia E. Duncan, Bayport, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 5, 1979, Ser. No. 9,648
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

260,434
PIPETTE
Elmer F. St. Amand, 12744 Kahlenberg La., N. Hollywood, Calif. 91607
Filed Mar. 2, 1979, Ser. No. 16,911
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55

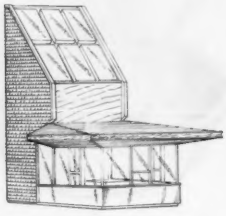
260,435
ULTRASONIC NEBULIZER
Herbert Marloth, Siegertsbrunn, and Ernst Reichl, Munich, both of Fed. Rep. of Germany, assignors to Bosch Siemens Hausgerate GmbH, Stuttgart, Fed. Rep. of Germany
Filed Oct. 2, 1979, Ser. No. 81,153
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1979, 4995
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—62



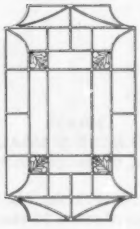
260,436
BUILDING WITH SIDE FACING SOLAR PANEL
Andrew W. Graybeal, Mountain View; Steve S. Hiller, Menlo Park, and Thomas T. Hisata, Palo Alto, all of Calif., assignors to Hiller Enterprises, Redwood City, Calif.
Filed Jan. 8, 1979, Ser. No. 1,467
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—30



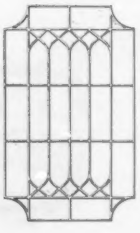
260,437
BUILDING WITH FORWARD FACING SOLAR PANEL
Andrew W. Graybeal, Mountain View; Steve S. Hiller, Menlo Park, and Thomas T. Hisata, Palo Alto, all of Calif., assignors to Hiller Enterprises, Redwood City, Calif.
Filed Jan. 8, 1979, Ser. No. 1,468
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—30



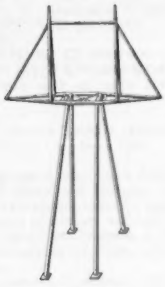
260,438
DECORATIVE WINDOW PANEL FOR DOORS
Lawrence R. Martinelli, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed Jun. 12, 1978, Ser. No. 914,262
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



260,439
DECORATIVE WINDOW PANEL FOR DOORS
Lawrence R. Martinelli, Chicago, Ill., assignor to United States Gypsum Company, Chicago, Ill.
Filed Jun. 12, 1978, Ser. No. 914,263
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



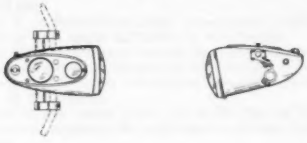
260,440
TRANSMISSION TOWER
Charles P. Green, Red Wing, Minn., assignor to International Telephone and Telegraph Corp., New York, N.Y.
Filed Dec. 5, 1979, Ser. No. 100,644
Term of patent 14 years
Int. Cl. D13—*03;* D25—*99*
U.S. Cl. D25—77



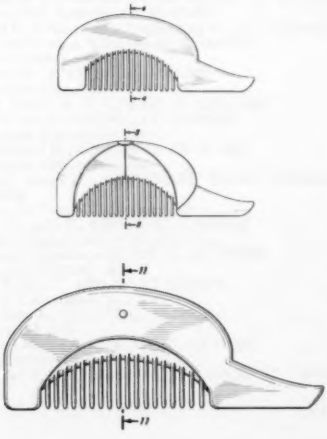
260,441
FLUORESCENT LAMP
Kazuo Ariga, and Youichiro Akanuma, both of Tokyo, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1978, Ser. No. 959,662
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—3

260,442
CANDLESTICK OR THE LIKE
Newton R. Leach, 7241 Woodson Rd., Overland Park, Kans. 66204, assignor to Newton R. Leach, Overland Park, Kans.
Filed May 2, 1978, Ser. No. 902,721
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—18

260,443
COMBINED HEADLIGHT AND SPEEDOMETER AND BRACKET THEREFORE
Orley R. Courtney, 502 E. Wiley St., Marion, Ind. 46952
Filed Apr. 28, 1978, Ser. No. 900,932
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—34



260,444
COMB SIMULATING A SPORTS CAP
John I. Horner, 914 Electric Ave., Venice, Calif. 90291
Filed Sep. 18, 1979, Ser. No. 76,620
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—22



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF AUGUST, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. McKenzie Co. Ltd.: *See—*
Moore, William A., 4,285,164, Cl. 47-69.000.

Abaskalov, Vladimir D.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.

Abbott Laboratories: *See—*
Bujan, Albert F., 4,285,492, Cl. 251-9.000.

Abe, Masahiro, to Glory Kogyo Kabushiki Kaisha. Method and apparatus for stacking sheets such as paper currency. 4,285,511, Cl. 271-178.000.

Abel, William A.: *See—*
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,286,111, Cl. 174-15.0BH.

Abeler, Gerd: *See—*
Wehner, Wolfgang; and Abeler, Gerd, 4,285,856, Cl. 260-45.75S.

Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for forming loops in tube sections for making sacks for the purpose of compensating for different lengths of sections. 4,285,685, Cl. 493-406.000.

Ackermann, Manfred; and Alfano, Nicholas, to Union Special Corporation. Needle guard for sewing machines. 4,285,291, Cl. 112-184.000.

Adachi, Akiyoshi: *See—*
Hara, Haruichi; Kanzaki, Toshihide; Motomuro, Hisanao; and Adachi, Akiyoshi, 4,285,927, Cl. 423-535.000.

Adamoli, Contardo: *See—*
Bernardis, Francesco; Adamoli, Contardo; and Cretaz, Franco, 4,285,603, Cl. 400-124.000.

Adams, Gar M., to Tecumseh Products Company. Spill and spit resistant fuel cap. 4,285,440, Cl. 220-202.000.

Adams, Joan M.: *See—*
Yezek, Milton; and Adams, Joan M., 4,285,977, Cl. 426-67.000.

Adler, Ralph P. I., to GTE Laboratories Incorporated. Method for producing color cathode ray tube aperture masks. 4,285,106, Cl. 29-25.150.

Aernoudt, Etienne A. D.: *See—*
Deruyttere, Andre E. A.; Delaey, Lucas J. A. E.; Aernoudt, Etienne A. D.; and Roos, Josef R., 4,285,739, Cl. 148-11.50C.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Charpak, Georges; Ngoc, Hoan N.; and Policarpo, Armando, 4,286,158, Cl. 250-374.000.

Agency of Industrial Science & Technology: *See—*
Makita, Yunosuke, 4,286,231, Cl. 331-94.50H.
Yamamoto, Shigeyuki, 4,285,566, Cl. 350-6.600.

Agfa-Gevaert Aktiengesellschaft: *See—*
Eickel, Rolf; and Tolksdorf, Dieter, 4,286,157, Cl. 250-370.000.
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,285,455, Cl. 226-188.000.

AGIP NUCLEARE S.p.A.: *See—*
Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, 4,285,645, Cl. 425-6.000.

Agrohol Systems, Inc.: *See—*
Rajamannan, A. H. J., 4,285,774, Cl. 202-154.000.

Agura, Kiyokazu: *See—*
Katayama, Toshiyuki; Agura, Kiyokazu; and Matsuda, Masayuki, 4,285,534, Cl. 285-119.000.

Aida, Kikuo, to Tokyo Juki Kogyo Kabushiki Kaisha. Upper layer feed mechanism in a sewing machine. 4,285,294, Cl. 112-311.000.

Air Products and Chemicals, Inc.: *See—*
Coe, Charles G., 4,286,073, Cl. 521-126.000.

Airco, Inc.: *See—*
Young, Morris S.; and Larbalestier, David C., 4,285,740, Cl. 148-11.50Q.

Aisin Seiki Kabushiki Kaisha: *See—*
Kazaoka, Kenichi; and Hayashi, Masayuki, 4,285,487, Cl. 248-396.000.

Aizawa, Shinichi: *See—*
Kitta, Hiroyuki; Aizawa, Shinichi; and Sawa, Hiroshi, 4,286,159, Cl. 250-381.000.

Aizawa, Tatsushi: *See—*
Hayashi, Masakatsu; Tanaka, Takeo; Natori, Tatsuo; Aizawa, Tatsushi; Kojima, Shigeru; and Senshu, Takao, 4,285,385, Cl. 164-9.000.

Akai Electric Company Limited: *See—*
Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, 4,285,894, Cl. 264-61.000.

Akamatsu, Hideaki: *See—*
Mizusawa, Shinichiro; Akamatsu, Hideaki; Noda, Fumiyoshi; and Watanabe, Yuji, 4,285,909, Cl. 422-179.000.

Akin, Cavit; and Murphy, Rose M., to Standard Oil Company (Indiana). Method for accelerating autolysis of yeast. 4,285,976, Cl. 426-60.000.

Akiya, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Carburetor. 4,285,887, Cl. 261-34.00A.

Akiyoshi, Hideki: *See—*
Nishizima, Hideyo; Ema, Hideaki; Tamura, Hiroshi; and Akiyoshi, Hideki, 4,286,035, Cl. 430-85.000.

Aktiebolaget Electrolux: *See—*
Doherty, Ian, 4,285,359, Cl. 137-205.000.

Akune, Mikio, to Nittetu Chemical Engineering Ltd. Process for the treatment of a waste liquid containing boron compounds and organic compounds. 4,285,820, Cl. 210-774.000.

Akzona Incorporated: *See—*
Hoppe, Hans-Joachim; and Ostertag, Karl, 4,285,898, Cl. 264-176.00F.

Aladdin Industries, Incorporated: *See—*
Bourner, Howard, 4,285,391, Cl. 165-30.000.

Albany International Corp.: *See—*
Barthelemy, Kenneth E., 4,285,817, Cl. 210-486.000.

Alberta Oil Sands Technology and Research Authority: *See—*
Taciuk, William, 4,285,773, Cl. 202-100.000.

Alberto-Culver Company: *See—*
Edwards, Diane B., 4,285,973, Cl. 424-358.000.

Album Graphics, Incorporated: *See—*
Richardson, William C.; and Isoldi, Mario, 4,285,150, Cl. 40-312.000.

Alexander, Robert O., to Cera International Limited. Apparatus for cleaning gas. 4,285,703, Cl. 55-228.000.

Alexandrova, Natalia A.: *See—*
Zuzanov, Georgy I.; Mironkin, Iosif S.; Tsarik, Jury N.; Alexandrova, Natalia A.; Kamensky, Sergei N.; and Nevedomsky, Evgeny N., 4,285,704, Cl. 55-274.000.

Alfano, Nicholas: *See—*
Ackermann, Manfred; and Alfano, Nicholas, 4,285,291, Cl. 112-184.000.

Allard, Louis R., to Beloit Corporation. Apparatus for feeding material out of silos or from stacks. 4,285,622, Cl. 414-133.000.

Allen, James H., to Smith International, Inc. Two cone bit with extended diamond cutters. 4,285,409, Cl. 175-336.000.

Allen, Linus S., to Mobil Oil Corporation. Neutron-neutron logging. 4,286,150, Cl. 250-270.000.

Allen, Richard B.; and Patten, Thomas E., to Du Pont de Nemours, E. I., and Company. Apparatus for stripping a cover sheet. 4,285,759, Cl. 156-584.000.

Allied Chemical Corporation: *See—*
Bean, Samuel L.; Seeling, Philip F.; Hoffman, Robert J.; and Low, William W., 4,285,923, Cl. 423-385.000.
Larson, Eric H., 4,285,786, Cl. 204-98.000.
Mares, Frank; and Jacobson, Stephen E., 4,286,068, Cl. 521-53.000.
Narasimhan, Mandayam C., 4,285,386, Cl. 164-463.000.
Poncha, Rustom P., 4,285,925, Cl. 423-425.000.

Alps Electric Co., Ltd.: *See—*
Kondo, Shiro, 4,285,097, Cl. 16-121.000.

Aluminum Company of America: *See—*
Becker, Aaron J.; and Careatti, Don R., 4,285,724, Cl. 75-84.400.
Sullivan, Daniel A., Jr., 4,285,785, Cl. 204-64.00R.

Alza Corporation: *See—*
Ayer, Atul D.; and Theeuwes, Felix, 4,285,987, Cl. 427-3.000.
Theeuwes, Felix, 4,286,067, Cl. 521-27.000.

Ambler, James R., to Gloucester Engineering Co., Inc. V-Board folder for flexible plastic films. 4,285,686, Cl. 493-439.000.

American Box Company: *See—*
Dyer, Harry F., 4,285,439, Cl. 217-45.000.

American Can Company: *See—*
Dunkerly, Cedric A., II, 4,285,647, Cl. 425-82.100.
Meyers, George L., 4,285,461, Cl. 229-44.00R.

American Filtrona Corporation: *See—*
Berger, Richard M., 4,286,005, Cl. 428-167.000.

American Hoechst Corporation: *See—*
Millington, James E.; and Papetti, Stelvio, 4,286,069, Cl. 521-56.000.

American Hospital Supply Corporation: *See—*
Intengan, Franklin F., 4,285,463, Cl. 233-26.000.

American Safety Equipment Corporation: *See—*
Stamboulian, Nazareth, 4,285,478, Cl. 242-107.000.

American Seating Company: *See—*
Quigley, Robert E., 4,285,172, Cl. 52-10.000.

American Stair Corporation, Inc.: *See—*
Seegers, Glen A., 4,285,177, Cl. 52-179.000.

AMF Incorporated: *See—*
Anderson, Lehman E., 4,285,419, Cl. 192-11.000.

Amistar Corporation: *See—*
Roecks, Carl C.; and Baker, Stuart C., 4,286,201, Cl. 318-640.000.

AMP Incorporated: *See*—
Peppler, Michael S.; and Bakermans, Johannes C. W., 4,285,118, Cl. 29-593.000.
Teagno, Vladimiro; and Trevisiol, Franco, 4,285,562, Cl. 339-33.000.
AMSTED Industries Incorporated: *See*—
Schuricht, Henry A., 4,285,434, Cl. 209-625.000.
Analog Devices, Incorporated: *See*—
Morong, William H., III, 4,286,225, Cl. 330-10.000.
Anchor Coupling Co., Inc.: *See*—
Gunning, David W., 4,285,228, Cl. 72-402.000.
Andary, Thomas J.; Berkebile, L. Raymond; Thomas, William R.; and Tse, Daphne C., to Baxter Travenol Laboratories, Inc. Method for making therapeutic enzyme compositions. 4,286,056, Cl. 435-3.000.
Anders, Dietmar, to Hermann Berstorff Maschinenbau GmbH. Granulating apparatus. 4,285,652, Cl. 425-311.000.
Anderson, Lehman E., to AMF Incorporated. Brake clutch release control for belt driven riding mowers. 4,285,419, Cl. 192-11.000.
Anderson, Richard W.; Resnick, Martin L.; and Schlener, J. Edward, to GTE Products Corp.; and GTE Laboratories Inc. Monitoring and signalling system including apparatus for processing and analyzing signals produced by activity monitoring sensors. 4,286,331, Cl. 364-900.000.
Andreas Stihl: *See*—
Zerrer, Gerhard; and Beier, Roland, 4,285,127, Cl. 30-276.000.
Andreoni, Alessandro: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; and Cesarani, Roberto, 4,285,966, Cl. 424-285.000.
Angelica Corporation: *See*—
Zins, Howard M.; and Morris, Edward L., Jr., 4,286,012, Cl. 428-252.000.
Aotsu, Shinichi: *See*—
Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, 4,285,894, Cl. 264-61.000.
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Arato, Laszlo. Method for washing by means of a rotating washing equipment, and washing device for the practice of the method. 4,285,736, Cl. 134-6.000.
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Frenzel, Jurgen, 4,285,115, Cl. 29-460.000.
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DiGiulio, Adolph V.; and Bauer, Jack N., 4,286,070, Cl. 521-88.000.
Argus Chemical Corporation: *See*—
Halle, Reidar; Peterson, David; Fisch, Michael A.; and Liauw, Koei-Liang, 4,285,877, Cl. 260-453.0RZ.
Pastorino, Ronald L.; and Lewis, Roger N., 4,285,866, Cl. 260-338.000.
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Ito, Akira; and Arisaka, Katsuharu, 4,285,677, Cl. 493-43.000.
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Armitage, David, to LeVeen, Harry V. Electrode system. 4,285,346, Cl. 128-422.000.
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Arrigoni, John P., to United Technologies Corporation. Apparatus and method for refinishing turbine blade airseals. 4,285,108, Cl. 29-156.80B.
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Merrill, Richard E.; and Massucco, Arthur A., 4,286,048, Cl. 430-284.000.
Artos Dr.-Ing. Meier-Windhorst KG (GmbH): *See*—
Lehmann, Helmut, 4,285,218, Cl. 68-5.00D.
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Miyake, Tetsuya; Takeda, Kunihiko; Miyata, Naoki; Saeki, Tatsushi; and Seko, Maomi, 4,285,811, Cl. 568-422.000.
Yoshida, Koichi; Hayano, Fusakazu; and Ii, Yoshiro, 4,286,015, Cl. 428-305.000.
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Asbury, Charles E., Jr.: *See*—
Clausen, Victor H.; and Asbury, Charles E., Jr., 4,285,758, Cl. 156-498.000.
Ashida, Shin: *See*—
Sugimoto, Kaname; and Yuen, Shokichi, 4,285,929, Cl. 424-85.000.
Ashland Oil, Inc.: *See*—
Kovach, Stephen M., 4,285,835, Cl. 252-432.000.
Norton, Richard V.; and Fisher, Dennis H., 4,286,109, Cl. 585-14.000.
Atchisson, Maxwell G. Retrofit doorknob lock apparatus. 4,285,221, Cl. 70-416.000.
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Atlantic Richfield Company: *See*—
Mooi, John, 4,285,806, Cl. 208-120.000.
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Audeh, Costandi A.; and Valyocsik, Ernest W., to Mobil Oil Corporation. Method of preparing crystalline zeolite. 4,285,922, Cl. 423-329.000.
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Auld, Bertram A.; and Elston, Gary W., to Leland Stanford Junior University, Board of Trustees of the. Ferromagnetic resonance probe and method for flaw testing in metals. 4,286,216, Cl. 324-237.000.
Ausnit, Steven, to Minigrip, Inc. Reclosable plastic bag construction made from a one piece extrusion 4,285,376, Cl. 150-3.000.
Austin, Paul R.; and Brine, Charles J., to University of Delaware. Chitin powder and process for making it. 4,286,087, Cl. 536-20.000.
Autelca AG: *See*—
Nyffenegger, Alfred, 4,285,351, Cl. 133-1.00R.
Averill, Robert G., to Minnesota Mining and Manufacturing Company. Prosthetic device. 4,285,070, Cl. 3-1.911.
Ayer, Atul D.; and Theeuwes, Felix, to Alza Corporation. Process for manufacturing device with dispersion zone. 4,285,987, Cl. 427-3.000.
B-Line Systems, Inc.: *See*—
Kowalski, Joseph W., 4,285,379, Cl. 411-85.000.
Babcock, Clarence L.; Busdiecker, Robert A.; and Hagedorn, Erwin C., to Owens-Illinois, Inc. Method of making low expansion crystallized glass-ceramics and telescope mirror blanks made thereby. 4,285,728, Cl. 106-39.700.
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Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,285,838, Cl. 252-469.000.
Bacardit, Juan S., to Bendiberica, S.A. Control device for hydraulic servomechanisms. 4,285,267, Cl. 91-434.000.
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Bachmann, William V. Internal combustion engine. 4,285,304, Cl. 123-52.00B.
Baenziger, Robert C. Touch control for a spin-casting reel. 4,285,476, Cl. 242-84.20A.
Baer, Ted A.: *See*—
Kohn, Gustave K.; and Baer, Ted A., 4,285,879, Cl. 260-453.700.
Bailly du Bois, Bernard. Method of energy conversion and a device for the application of said method. 4,285,202, Cl. 60-650.000.
Baisden, C. Robert. Exhaust gas pollution control system. 4,285,916, Cl. 423-212.000.
Baker, David C.; Bantz, David F.; and Evangelisti, Carlo J., to International Business Machines Corporation. Common bus communication system in which the width of the address field is greater than the number of lines on the bus. 4,286,321, Cl. 364-200.000.
Baker International Corporation: *See*—
Holland, Arvin E.; Wright, Douglas C.; Baker, John R.; and Curington, Alfred R., 4,285,399, Cl. 166-113.000.
Mullins, Albert A., II, 4,285,400, Cl. 166-179.000.
Silberman, Raphael J.; and Smith, Everett H., 4,285,533, Cl. 285-2.000.
Baker, John R.: *See*—
Holland, Arvin E.; Wright, Douglas C.; Baker, John R.; and Curington, Alfred R., 4,285,399, Cl. 166-113.000.
Baker Perkins Holdings Limited: *See*—
Caunt, Alan, 4,285,430, Cl. 206-471.000.
Baker, Richard H., to Exxon Research & Engineering Co. VMOS/-Bipolar dual-triggered switch. 4,286,175, Cl. 307-581.000.
Baker, Stuart C.: *See*—
Roecks, Carl C.; and Baker, Stuart C., 4,286,201, Cl. 318-640.000.
Bakermans, Johannes C. W.: *See*—
Peppler, Michael S.; and Bakermans, Johannes C. W., 4,285,118, Cl. 29-593.000.
Baladjanian, Gregor; and Rothman, Robert L., to Chromalloy American Corporation. High temperature braze repair of superalloys. 4,285,459, Cl. 228-119.000.
Balchunas, Charles A., to General Electric Company. Thermostat and iron assembly. 4,285,145, Cl. 38-77.700.
Ball Corporation: *See*—
Dye, John F.; and Lowe, Earl L., 4,286,000, Cl. 428-64.000.
Scholes, Addison B., 4,285,296, Cl. 118-630.000.
Balouskus, Robert A.: *See*—
Feinberg, Stewart C.; Lundsager, Christian B.; Lundquist, Joseph T., Jr.; and Balouskus, Robert A., 4,285,751, Cl. 156-242.000.
Balsamo, Ronald. Reinforcement for computer printout sheets. 4,285,531, Cl. 281-5.000.
Bandag Incorporated: *See*—
Dugger, Doyle L., 4,285,235, Cl. 73-146.000.
Banic, James M., Jr.: *See*—
Spreadbury, Robert J.; and Banic, James M., Jr., 4,286,207, Cl. 323-263.000.
Bantz, David F.: *See*—
Baker, David C.; Bantz, David F.; and Evangelisti, Carlo J., 4,286,321, Cl. 364-200.000.

Barbano, Normand; and Kuo, Samuel C., to GTE Products Corporation. Log-periodic monopole antenna. 4,286,271, Cl. 343-792.500.
Bardsley, Harold B., to Spencer Wright Industries, Inc. Grinding of knives. 4,285,170, Cl. 51-288.000.
Barker, Larry D.: *See*—
Murray, E. Donald; Myers, Chester D.; and Barker, Larry D., 4,285,862, Cl. 260-123.500.
Barnes, Martin S.: *See*—
Hinton, Kevin; and Barnes, Martin S., 4,285,180, Cl. 52-396.000.
Barnes, Mary K. Watch band pin connector assembly. 4,285,450, Cl. 224-164.000.
Barrat, Christian R.; Wevers, Jean; and Koster, Robertus J. C., to Procter & Gamble Company, The. Highly concentrated fatty acid containing liquid detergent compositions. 4,285,841, Cl. 252-559.000.
Barre, Francoise: *See*—
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,285,788, Cl. 204-159.160.
Barriault, Judith: *See*—
de Villers, Paul; and Barriault, Judith, 4,285,432, Cl. 206-591.060.
Barron, Ellis. Pianoharp action. 4,285,261, Cl. 84-258.000.
Barry-Wehmiller Company: *See*—
Coats, Graham C.; Elliott, Gary A.; and Bulboaca, Michael A., 4,285,365, Cl. 137-625.150.
Barthelemy, Kenneth E., to Albany International Corp. Disc sector. 4,285,817, Cl. 210-486.000.
Barton, Joseph J.; and Boyd, Bobby G. Angle rope weed killer. 4,285,160, Cl. 47-1.500.
Bartsch, Ulrich: *See*—
Salje, Ernst; and Bartsch, Ulrich, 4,285,260, Cl. 83-835.000.
BASF Aktiengesellschaft: *See*—
Hansen, Guenter; Kolbinger, Hans J.; Scheuermann, Horst; and Zeidler, Georg, 4,285,860, Cl. 260-152.000.
Hoch, Helmut; and Hiller, Heinrich, 4,286,094, Cl. 546-37.000.
Lamm, Guenther; and Dehnert, Johannes, 4,285,693, Cl. 8-521.000.
Lamprecht, Josef; and Ley, Gregor, 4,285,597, Cl. 356-446.000.
BASF Wyandotte Corporation: *See*—
Davis, John E.; and Cenker, Moses, 4,286,074, Cl. 521-137.000.
Basily, Basily B.; Sansome, Dennis H.; and Jones, Gerald M., to National Research Development Corporation. Load-measuring devices. 4,285,234, Cl. 73-862.650.
Bass, Sidney; Cook, John S.; and May, Herbert, to Mattel, Inc. Direction reversing crib toy. 4,285,159, Cl. 46-262.000.
Batstone, Roger J., to French Masterpieces, Inc. Automatic swimming pool cover. 4,285,078, Cl. 4-661.000.
Battarel, Alain: *See*—
Brainkel, Gerard; and Battarel, Alain, 4,286,310, Cl. 362-203.000.
Battelle Institut e.V.: *See*—
Hugemann, Bernhard; and von Sengbusch, Guenter, 4,285,907, Cl. 422-100.000.
Knodler, Reinhard; and Bohme, Gotthold, 4,285,828, Cl. 252-182.100.
Battisti, Ruggero; Casagrande, Francesco; and Bausani, Giovanni, to Montedison S.p.A. Pigment compounds and method of preparations. 4,285,863, Cl. 260-176.000.
Bauer, Jack N.: *See*—
DiGiulio, Adolph V.; and Bauer, Jack N., 4,286,070, Cl. 521-88.000.
Bauer, Johann G. H., to Bauer, Robert K. Apparatus for withdrawing the oil from an internal combustion engine. 4,285,360, Cl. 137-205.000.
Bauer, Robert K.: *See*—
Bauer, Johann G. H., 4,285,360, Cl. 137-205.000.
Bauer, Werner R., to Robertshaw Controls Company. Electrical switch constructions and methods of making the same. 4,286,243, Cl. 335-193.000.
Baumann, Hanspeter: *See*—
Gatzi, Karl; Baumann, Hanspeter; Kunz, Walter; and Gloor, Bernhard, 4,285,959, Cl. 424-270.000.
Bausani, Giovanni: *See*—
Battisti, Ruggero; Casagrande, Francesco; and Bausani, Giovanni, 4,285,863, Cl. 260-176.000.
Baxter Travenol Laboratories, Inc.: *See*—
Andary, Thomas J.; Berkebile, L. Raymond; Thomas, William R.; and Tse, Daphne C., 4,286,056, Cl. 435-3.000.
Bayer Aktiengesellschaft: *See*—
Beck, Manfred; and Pampus, Gottfried, 4,285,833, Cl. 252-428.000.
Braden, Rudolf; and Neeff, Rutger, 4,285,874, Cl. 260-376.000.
David, Karl-Heinz; Nogaj, Alfred; and Rinkler, Heinrich, 4,286,076, Cl. 525-221.000.
Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, 4,285,935, Cl. 424-177.000.
Hund, Franz; and Kresse, Peter, 4,285,726, Cl. 106-14.050.
Kabbe, Hans-Joachim; Frohberger, Paul-Ernst; and Roessler, Peter, 4,285,965, Cl. 424-283.000.
Quiring, Bernd; Wenzel, Wolfgang; Niederdellmann, Georg; Wagner, Hans; and Goyert, Wilhelm, 4,286,080, Cl. 525-455.000.
Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Orttmann, Harry, 4,285,692, Cl. 8-499.000.
Wehinger, Egbert; and Bossert, Friedrich, 4,285,955, Cl. 424-266.000.
Bayside Holding Corp.: *See*—
Knight, Stuart R., 4,285,917, Cl. 423-224.000.
Bazdyreva, Natalia M.: *See*—
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.
BBC Brown, Boveri & Co. Ltd.: *See*—
Kommissari, Karl, 4,286,317, Cl. 363-136.000.
Pfenninger, Hans, 4,285,707, Cl. 55-396.000.
Ruffieux, Stanislaus; and Schade, Ekkehard, 4,286,128, Cl. 200-148.00R.
Bean, Samuel L.; Seeling, Philip F.; Hoffman, Robert J.; and Low, William W., to Allied Chemical Corporation. Manufacture of calcium nitrite solutions with low nitrate content. 4,285,923, Cl. 423-385.000.
Beaudette, Richard A.; and Gonsalves, John A., to GTE Laboratories Incorporated. Optical cable connector for connecting an optical fiber with a photodiode. 4,285,572, Cl. 350-96.200.
Beavers, Allan E., to T. A. Pelsue Company. Multipurpose tent. 4,285,354, Cl. 135-1.00R.
Beavers, Allan E.: *See*—
Pelsue, Bradley A.; and Beavers, Allan E., 4,285,269, Cl. 98-33.00R.
Bechter, Sigrid: *See*—
Lustig, Leopold P.; and Bechter, Sigrid, 4,285,671, Cl. 433-126.000.
Beck, Manfred; and Pampus, Gottfried, to Bayer Aktiengesellschaft. Catalyst, its production and a process for the polymerization of butadiene. 4,285,833, Cl. 252-428.000.
Becker, Aaron J.; and Careatti, Don R., to Aluminum Company of America. Continuous production of finely divided zirconium powder. 4,285,724, Cl. 75-84.400.
Beckman Instruments, Inc.: *See*—
Ehret, Robert J., 4,286,203, Cl. 318-801.000.
Ishimaru, Kenzo; and Sharples, Thomas D., 4,285,904, Cl. 264-322.000.
Beddall, Edward A.; and Goddard, Bryan J., to Warner-Lambert Company. Razor cartridge dispenser. 4,285,428, Cl. 206-354.000.
Beecham Group Limited: *See*—
Ferres, Harry, 4,285,960, Cl. 424-271.000.
Smith, Richard A. G., 4,285,932, Cl. 424-94.000.
Beier, Roland: *See*—
Zerrer, Gerhard; and Beier, Roland, 4,285,127, Cl. 30-276.000.
Bejed, Inc.: *See*—
Dannenmann, John E., Jr.; and Johnson, Bill E., 4,286,114, Cl. 179-1.0CN.
Beker, Martin E.: *See*—
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.
Bell & Howell Company: *See*—
Garland, Thomas H.; and Zimmerman, Michael T., 4,285,576, Cl. 350-387.000.
Bell, Ted A.; and Cooksey, Timothy S., to Pretty Products, Inc. Sunvisor cassette holder. 4,285,554, Cl. 312-9.000.
Bell Telephone Laboratories, Incorporated: *See*—
Coldren, Larry A., 4,285,763, Cl. 156-643.000.
Miller, Gabriel L., 4,286,215, Cl. 324-158.00R.
Bellaff, Leslie, to Weaver, William W. Balancing air device for a heating unit. 4,285,325, Cl. 126-112.000.
Bellows, Richard J.; Grimes, Patrick G.; and Elspass, Chester W., to Exxon Research & Engineering Co. Annular electrodes for shunt current elimination. 4,285,794, Cl. 204-260.000.
Beloit Corporation: *See*—
Allard, Louis R., 4,285,622, Cl. 414-133.000.
Page, Robert E., 4,285,767, Cl. 162-216.000.
Salvai, Nazzareno, 4,285,764, Cl. 162-132.000.
Belot, Pierre, to Saft-Societe des Accumulateurs Fixes et de Traction. Device for controlling the charging of a storage battery. 4,286,204, Cl. 320-31.000.
Belousov, Anatoly A.: *See*—
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,286,062, Cl. 435-188.000.
Ben-Gera, Itamar: *See*—
Wenger, Lavon G.; Rokey, Galen J.; and Ben-Gera, Itamar, 4,286,058, Cl. 435-99.000.
Ben-Nathan, Samuel; Neumeister, Marwin G.; Shats, Mikhail; and McCallum, Robert S., to NCR Canada Ltd - NCR Canada Ltee. Apparatus and method for detection of overlapping objects. 4,286,149, Cl. 250-223.00R.
Benchmark Tool Company: *See*—
Schnell, John W.; and Haenel, Max K., 4,285,128, Cl. 30-276.000.
Bendiberica, S.A.: *See*—
Bacardit, Juan S., 4,285,267, Cl. 91-434.000.
Bennett, Gregory B., to Sandoz, Inc. Pyrano[4,3-e]-as-triazines and corresponding 4-oxides. 4,285,944, Cl. 424-249.000.
Bennett, Phillip P.: *See*—
Taylor, Richard J.; and Bennett, Phillip P., 4,286,291, Cl. 358-138.000.
Bennett, Richard E.; and Hittner, Mary A., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesive susceptible to ultraviolet light-induced detackification. 4,286,047, Cl. 430-280.000.
Benoit, Raymond A., to Societe les Piles Wonder. Portable lighting apparatus comprising a diffusing lens. 4,286,312, Cl. 362-309.000.
Bentley, Arthur P. Centrifugally operated clutch and variable ratio torque multiplier. 4,285,422, Cl. 192-105.00B.
Berger, Hans-Werner: *See*—
Schmidt-Rabenau, Hartmut; and Berger, Hans-Werner, 4,285,791, Cl. 204-195.00M.

Berger, J. Louis: *See—*
Wagner, Gilbert F.; and Berger, J. Louis, 4,286,261, Cl. 340-565.000.

Berger, Richard M., to American Filtrona Corporation. Ink reservoir element for use in a marking instrument, and method and apparatus for producing same. 4,286,005, Cl. 428-167.000.

Berges, David A., to SmithKline Corporation. 7-Acyl-3-(substituted tetrazolyl thiomethyl)cephalosporins. 4,286,089, Cl. 544-27.000.

Berginski, Werner E., to Leopold Kostal, Firma. Ignition switch. 4,286,126, Cl. 200-11.00C.

Bergstrasser, Werner, to USM Corporation. Cementing press. 4,285,085, Cl. 12-16.400.

Berkebile, L. Raymond: *See—*
Andary, Thomas J.; Berkebile, L. Raymond; Thomas, William R.; and Tse, Daphne C., 4,286,056, Cl. 435-3.000.

Bernardis, Francesco; Adamoli, Contardo; and Cretaz, Franco, to Ing. C. Olivetti & C., S.p.A. Wire printing device. 4,285,603, Cl. 400-124.000.

Bernett, William A.: *See—*
Vermillion, Russell L.; and Bernett, William A., 4,286,022, Cl. 428-423.100.

Berry, James L. Trailer hitch visual alignment device. 4,285,138, Cl. 33-264.000.

Berryhill, A. J. Grave marker. 4,285,149, Cl. 40-124.500.

Bertozzi, Richard J.; Pavelek, Joseph M., Jr.; and Wood, Daniel S., to Armour-Dial, Inc. Toilet soap bars imparting improved moisturing and skin feel characteristics. 4,285,826, Cl. 252-117.000.

Bethke, Monika: *See—*
Engelmann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,286,054, Cl. 430-544.000.

Betsuda, Yasuhiro; Taguchi, Yoshio; and Takashashi, Yasuo, to Shinwa Seisakusho Co., Ltd. Process for tapering synthetic fibers at the end portion thereof. 4,285,892, Cl. 264-23.000.

Betti, Pier L., to Dinamyk Pesquisa E. Desenvolvimento Tecnologico S/C Ltda. Tecnologia de Solucoes. Protective shoulder structure for roadway joints. 4,285,612, Cl. 404-68.000.

Betz, Norman L.; Lanter, Kent J.; and Williams, Danny L., to Ralston Purina Company. Intake limiting liquid feed supplement for cattle. 4,285,974, Cl. 426-2.000.

Beyer, Helmut: *See—*
Eberhard, Riessland; Beyer, Helmut; and Kossman, Erich, 4,286,197, Cl. 318-38.000.

Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, to AGIP NUCLEARE S.p.A. Producing microspheres by vibrations. 4,285,645, Cl. 425-6.000.

BF Goodrich Company, The: *See—*
Mikofalvy, Bela K.; and Turner, James W., 4,286,081, Cl. 526-74.000.

Biax Fiberfilm Corporation: *See—*
Schwarz, Eckhard C. A., 4,285,100, Cl. 19-161.100.

Biener, John K.: *See—*
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Bigler, Allan J.: *See—*
Lassen, Niels; Boges, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,285,956, Cl. 424-267.000.

Bimber, Russell M.; Buchman, Russell; DePompei, Michael F.; and Powers, Larry J., to Diamond Shamrock Corporation. Synthesis of pyridazinone pharmaceutical intermediates using diketene reactant. 4,286,091, Cl. 544-239.000.

Binder, Georg, to Robert Bosch GmbH. Bearingless generator and rotary machine combination. 4,286,187, Cl. 310-91.000.

Binkhorst, Cornelius D.: *See—*
Morcher, Kurt A.; Loones, Leo H.; and Binkhorst, Cornelius D., 4,285,072, Cl. 3-13.000.

Biscomb, Lloyd I. Multiple wind turbine tethered airfoil wind energy conversion system. 4,285,481, Cl. 244-33.000.

Bishop, George H., Jr.; and Croft, William J., to United States of America, Army. Temperature responsive device. 4,286,247, Cl. 337-402.000.

Blache, Louis J.: *See—*
Noar, Raymond; and Blache, Louis J., 4,285,248, Cl. 74-5.00F.

Blackburn, Ian: *See—*
Blackburn, Robert V.; and Blackburn, Ian, 4,285,550, Cl. 308-6.00R.

Blackburn, Robert V.; and Blackburn, Ian. Weight transfer roller apparatus. 4,285,550, Cl. 308-6.00R.

Blanchard, Floyd W. Stand for supporting a hand-held implement. 4,285,489, Cl. 248-471.000.

Blankenship, Thomas O.: *See—*
Luebbert, William K.; Blankenship, Thomas O.; and Kuberski, Lawrence F., 4,285,620, Cl. 408-212.000.

Block, Aleck; and Hasegawa, Hiroshi, to Merit Abrasive Products, Inc. Abrasive flap drum. 4,285,171, Cl. 51-337.000.

Blom, Hubert P., to General Motors Corporation. Inertia release for belt retractor winding prevention mechanism. 4,285,479, Cl. 242-107.40A.

Blomley, Peter F., to International Standard Electric Corporation. Bridge amplifier. 4,286,123, Cl. 179-170.00T.

Bloomquist, Marvin G.; Hoehn, Gustave L., Jr.; Norton, Lonnie J.; and Warner, Barry N., to Mobil Oil Corporation. Multiple site magnetotelluric measurements. 4,286,218, Cl. 324-350.000.

Bloxsom, Dan E. Solar heater. 4,285,331, Cl. 126-428.000.

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Bowes, Robert G.; and Chapman, Robert D., 4,285,742, Cl. 148-16.000.

Bochan, John, to General Electric Company. Flexible coupling. 4,285,214, Cl. 64-15.00B.

Bochenek, Volker: *See—*
Stolz, Albert; Thiel, Erich; Bochenek, Volker; and Stoklassa, Roland, 4,285,316, Cl. 123-514.000.

Bocker, Richard P., to United States of America, Navy. Incoherent optical ambiguity function generator. 4,286,328, Cl. 364-851.000.

Boder, Wilfried. Process and apparatus for the continuous burning of a fuel. 4,285,663, Cl. 431-76.000.

Boehringer Mannheim GmbH: *See—*
Wulff, Karl; Stahler, Fritz; and Gruber, Wolfgang, 4,286,057, Cl. 435-8.000.

Boeing Company, The: *See—*
Lewis, Delbert S., 4,285,482, Cl. 244-207.000.
Linscheid, Larry L.; and Mueller, Philip M., 4,285,466, Cl. 236-13.000.

Boelter Industries, Inc.: *See—*
Boelter, Lester B., 4,286,006, Cl. 428-182.000.

Boelter, Lester B., to Boelter Industries, Inc. Corrugated material. 4,286,006, Cl. 428-182.000.

Boges, Klaus P.: *See—*
Lassen, Niels; Boges, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,285,956, Cl. 424-267.000.

Bogren, Robert G.: *See—*
Hedstrom, Norman A.; Bogren, Robert G.; and Wright, David M., 4,285,555, Cl. 312-184.000.

Bohart, Paul R.; and Gibbemeyer, Joseph F., to Cincinnati Milacron Inc. Self-centering blow mold. 4,285,658, Cl. 425-538.000.

Bohm, George G. A.; and Gross, Stanley S., to Firestone Tire & Rubber Company, The. Apparatus for continuous tread production. 4,285,654, Cl. 425-327.000.

Bohme, Gotthold: *See—*
Knodler, Reinhard; and Bohme, Gotthold, 4,285,828, Cl. 252-182.100.

Boisvert, Ives L. Deck seat bracket. 4,285,542, Cl. 297-217.000.

Boldt, Allyn L.: *See—*
Bray, Lane A.; Boldt, Allyn L.; and Van Tuyl, Harold H., 4,285,891, Cl. 264-0.500.

Bolen, Charles E.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,285,734, Cl. 106-273.00R.

Bolldorf, Kurt; and Schmidt, Gottfried, to Pfaff Industriemaschinen GmbH. Embroidering machine. 4,285,289, Cl. 112-98.000.

Bonas Brothers Limited: *See—*
Hilton, William J., 4,285,162, Cl. 47-29.000.

Bonta, Anthony R.; and Gasche, Charles J., to United States Steel Corporation. Sectional hot top. 4,285,491, Cl. 249-102.000.

Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., to Fiber Industries, Inc. Selfbonded nonwoven fabrics. 4,285,748, Cl. 156-167.000.

Booker, William G., Jr. Collapsible growing plant enclosure. 4,285,163, Cl. 47-45.000.

Boose, James R.: *See—*
Falck, Glenn H.; and Boose, James R., 4,285,271, Cl. 99-348.000.

Borden, Inc.: *See—*
Hickson, Charles H., 4,285,848, Cl. 260-29.300.

Boren, Paul R.: *See—*
Jones, Donald E.; Parker, DeRay; and Boren, Paul R., 4,286,165, Cl. 250-484.000.

Borg-Warner Corporation: *See—*
Fox, Clarence D., 4,285,700, Cl. 48-180.00C.
Willis, Gordon A., 4,285,493, Cl. 251-14.000.

Bossert, Friedrich: *See—*
Wehinger, Egbert; and Bossert, Friedrich, 4,285,955, Cl. 424-266.000.

Botsch, Franz; and Kraus, Helmut, to Hoechst Aktiengesellschaft. Process for the continuous manufacture of vinyl chloride polymers. 4,286,078, Cl. 525-317.000.

Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., to International Business Machines Corporation. Computer-controlled copy production machine having job separation capabilities. 4,285,591, Cl. 355-14.00C.

Bourner, Howard, to Aladdin Industries, Incorporated. Electrical system for food service devices. 4,285,391, Cl. 165-30.000.

Bousquet, Francois: *See—*
Mamourian, Armand; Bousquet, Francois; and Helgorsky, Jacques, 4,285,921, Cl. 423-321.00S.

Bowes, Robert G.; and Chapman, Robert D., to BOC Limited. Heat treatment method. 4,285,742, Cl. 148-16.000.

Boyd, Bobby G.: *See—*
Barton, Joseph J.; and Boyd, Bobby G., 4,285,160, Cl. 47-1.500.

Brabets, Robert I.: *See—*
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,286,111, Cl. 174-15.0BH.

Braden, Rudolf; and Neeff, Rutger, to Bayer Aktiengesellschaft. 1-Isocyanato-anthraquinones. 4,285,874, Cl. 260-376.000.

Braden Steel Corporation: *See—*
Dinges, Kenneth N., 4,285,182, Cl. 52-478.000.

Brady, Joseph M.; and Peterson, Harold S., to MSL Industries, Inc. Method and apparatus for making lock washers. 4,285,084, Cl. 10-73.000.

Brainkel, Gerard; and Battarel, Alain, to Compagnie Industrielle des Piles Electriques "Cipel". Lantern fed by an electric battery. 4,286,310, Cl. 362-203.000.

Braithwaite, Geoffrey C., to British Gas Corporation. Pipe inspection apparatus. 4,285,242, Cl. 73-623.000.

Bralorne Resources Limited: *See*—
Sturgeon, Leonard A., 4,285,494, Cl. 251-63.000.
Branson International Plasma Corp.: *See*—
Welty, Joseph M., 4,285,800, Cl. 204-298.000.
Braun, Richard; Johnson, Russell W.; and Gatsis, John G., to UOP Inc. Catalytic slurry process for black oil conversion. 4,285,803, Cl. 208-48.0AA.
Braverman, Joseph, to Rotoplas Ltd. Method of molding a re-enforced article. 4,285,902, Cl. 264-229.000.
Braxton, Earl J. Apparatus for extracting proteins from urine. 4,285,077, Cl. 4-462.000.
Bray, Lane A.; Boldt, Allyn L.; and Van Tuyl, Harold H., to Exxon Nuclear, Inc. Method of removing fission gases from irradiated fuel. 4,285,891, Cl. 264-0.500.
Brendley, William H., Jr., to Rohm and Haas Company. Powder coatings containing copolymer containing isobornyl methacrylate as melt flow modifier. 4,286,021, Cl. 428-413.000.
Brezulova, Elizaveta A.: *See*—
Saveliev, Alexandr I.; and Brezulova, Elizaveta A., 4,285,192, Cl. 57-58.890.
Brieger, Emmet F. Method and apparatus for stimulating oil well production. 4,285,402, Cl. 166-311.000.
Brimhall, Randall L. Hydraulic pump and valve. 4,285,641, Cl. 417-442.000.
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Austin, Paul R.; and Brine, Charles J., 4,286,087, Cl. 536-20.000.
Brinkers, Gerardus C. Holder for packaging, displaying and offering for sale of articles, as well as separate assembly therefor. 4,285,435, Cl. 211-49.00D.
British Gas Corporation: *See*—
Braithwaite, Geoffrey C., 4,285,242, Cl. 73-623.000.
Collingwood, John C., 4,285,243, Cl. 73-623.000.
Britton, Thomas C.; and Wagner, Eugene R., to Dow Chemical Company, The. Novel tetrazolo [4,5-C][1,2,3]benzotriazines. 4,286,090, Cl. 544-184.000.
Brode, David A.; and Smith, Howard L., to Crompton & Knowles Corporation. Sulfonated naptho[1,2]triazole azo barbituric acid derivatives. 4,285,861, Cl. 260-154.000.
Brois, Stanley J.; and Gutierrez, Antonio, to Exxon Research & Engineering Co. Two phase process for the preparation of azole and azoline disulfides. 4,286,096, Cl. 548-130.000.
Bronnec, Jean A. L., to Etablissements Generaux de Mecanique de l'Ouest. Apparatus for folding food articles in sheet form. 4,285,653, Cl. 425-324.100.
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Brown, Daniel E.: *See*—
Singh, Rajinder P.; and Brown, Daniel E., 4,285,099, Cl. 17-53.000.
Brown, George A.: *See*—
Neyhart, James H.; Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,286,033, Cl. 430-58.000.
Brown, Paul R.: *See*—
Jelinek, Ross R.; Carbone, Victor T.; and Brown, Paul R., 4,285,259, Cl. 83-552.000.
Brown, Ralph V., to Facet Enterprises, Inc. Universal intermittent windshield wiper circuit. 4,286,200, Cl. 318-443.000.
Brown, Robert E.: *See*—
Specker, Steven R.; Sawyer, Craig D.; Crowther, Russell L.; Gitnick, Bennett J.; Walters, Kenneth V.; Brown, Robert E.; and Fennern, Larry E., 4,285,769, Cl. 176-30.000.
Brown, Thomas L.; and Henrick, Clive A., to Zoecon Corporation. Pesticidal S-pyridyl thioesters of phenylbutanoic acids and derivatives thereof. 4,285,954, Cl. 424-263.000.
Brown, Timothy A.: *See*—
Vander Molen, Gary L.; and Brown, Timothy A., 4,285,445, Cl. 222-49.000.
Brownell, Wallace F.: *See*—
Shell, Ronald G.; Brownell, Wallace F.; Fedder, Richard C.; and Christou, Kyriakos, 4,286,274, Cl. 346-75.000.
Brunswick Corporation: *See*—
Hundertmark, James M.; and Wagner, James L., 4,285,308, Cl. 123-187.50R.
Bryant, Charles P., to Lubrizol Corporation, The. Hydroxyalkyl hydroxy-aromatic condensation products as fuel and lubricant additives. 4,285,824, Cl. 252-56.00D.
Buchanan, Robert H. Crushing apparatus. 4,285,373, Cl. 144-2.00R.
Buchman, Russell: *See*—
Bimber, Russell M.; Buchman, Russell; DePompei, Michael F.; and Powers, Larry J., 4,286,091, Cl. 544-239.000.
Buckman Laboratories, Inc.: *See*—
Pera, John D.; and Johnson, Betty S., 4,285,765, Cl. 162-161.000.
Buckner, Carrol E.; Cook, C. Glenn; and Kane, Thomas J., to CEBU Corporation. Firebox refractory floor. 4,285,327, Cl. 126-143.000.
Buckwalter, Charles Q., Jr., to United States of America, Energy. Process for preparing improved silvered glass mirrors. 4,285,992, Cl. 427-165.000.
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszelly, Eniko; and Kosoczky, Ibolya, to Egyt Gyogyszervegyeszeti Gyar. Cyclododecanone oximes. 4,285,942, Cl. 424-248.560.
Budecker, Ludwig, to ITT Industries, Inc. Accumulator charging valve. 4,285,198, Cl. 60-547.00A.
Budzich, Tadeusz. Load responsive control system. 4,285,195, Cl. 60-450.000.
Buffet, Denis, to Robatel S.L.P.I. Centrifuges with hydraulic controls. 4,285,462, Cl. 233-20.00A.
Bujan, Albert F., to Abbott Laboratories. Flow control device. 4,285,492, Cl. 251-9.000.
Bukin, Vasily N.: *See*—
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.
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Bunker Ramo Corporation: *See*—
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Burke, Willard E. Retractable sonar sensing system. 4,285,485, Cl. 248-291.000.
Burkert GmbH: *See*—
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Burr Oak Tool & Gauge Company: *See*—
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Kauffman, Samuel L.; and Morin, John O., 4,286,265, Cl. 340-754.000.
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Siy, Pepe, 4,286,255, Cl. 340-146.3SY.
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Burton, Chester G.; and Burton, John H. Apparatus and method for increasing fuel efficiency. 4,285,666, Cl. 431-347.000.
Burton, John H.: *See*—
Burton, Chester G.; and Burton, John H., 4,285,666, Cl. 431-347.000.
Busdiecker, Robert A.: *See*—
Babcock, Clarence L.; Busdiecker, Robert A.; and Hagedorn, Erwin C., 4,285,728, Cl. 106-39.700.
Butler, Robert S.; and Crombie, Lance B. Continuous fermentation and distillation apparatus. 4,286,066, Cl. 435-316.000.
Butts, Gene A.; and Rhine, Samuel, to Helena Laboratories Corporation. Optical system for densitometer. 4,285,594, Cl. 356-72.000.
Buus, Jorn L. M.: *See*—
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Byk-Mallinckrodt CIL B.V.: *See*—
Rossem, Hendrik V., 4,286,169, Cl. 250-515.000.
Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., to Garrett Corporation, The. Hydraulic assist turbocharger system. 4,285,200, Cl. 60-607.000.
Cabot Corporation: *See*—
Hardy, John F.; Kintz, Donald P.; and Taylor, Vaughn W., 4,285,846, Cl. 260-29.20E.
Cahen, George L., Jr.: *See*—
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Cahill, John W., to PepsiCo Inc. Container redemption apparatus and process. 4,285,426, Cl. 194-4.00C.
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Calhoun, Gregory L.; and Cassette, Angelo, to Westinghouse Electric Corp. Apparatus for steam generator tube wrapper spacer and support block removal. 4,285,503, Cl. 266-71.000.
California Institute of Technology: *See*—
Yen, Shiao-Ping S.; Rembaum, Alan; and Landel, Robert F., 4,285,819, Cl. 210-679.000.
Calmac Manufacturing Corporation: *See*—
MacCracken, Calvin D., 4,286,141, Cl. 219-365.000.
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Campos, Pilar A. Module for housing containers and for forming a storing arrangement. 4,285,449, Cl. 294-32.000.
Camsco, Inc.: *See*—
Higgins, Bobby L., 4,285,752, Cl. 156-250.000.
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Kubela, Rudolf; Edwards, Philip D.; and Hughes, Lisa A., 4,286,095, Cl. 546-213.000.
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Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, 4,285,575, Cl. 350-357.000.
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,286,032, Cl. 430-55.000.
Yamada, Yu, 4,285,579, Cl. 350-470.000.

Canter, Joseph M., to Polaroid Corporation. Photometric device. 4,285,583, Cl. 354-23.00R.
Canter, Joseph M., to Polaroid Corporation. Photometric device. 4,285,584, Cl. 354-31.000.
Caputo, William R., to Westinghouse Electric Corp. Timing waveform generator. 4,286,222, Cl. 328-155.000.
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Carbone, Victor T.: *See*—
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Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., to Richardson-Merrell Inc. 1-Piperidine-alkanol derivatives, pharmaceutical compositions thereof, and method of use thereof. 4,285,957, Cl. 424-267.000.
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., to Richardson-Merrell Inc. 1-Piperidine-alkylene ketones, pharmaceutical compositions thereof and method of use thereof. 4,285,758, Cl. 424-267.000.
Carr, James R., to Atomic Products Corp. Phantom simulation device for scintillation cameras. 4,286,168, Cl. 250-510.000.
Cartwright, David; and Collins, David J., to Imperial Chemical Industries Limited. Selective herbicides. 4,285,723, Cl. 71-103.000.
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CEBU Corporation: *See*—
Buckner, Carrol E.; Cook, C. Glenn; and Kane, Thomas J., 4,285,327, Cl. 126-143.000.
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Collura, Peter C.; and Pierce, Chester J., Jr., 4,285,185, Cl. 53-48.000.
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Champion International Corporation: *See*—
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Chandler, Kenneth, to Masson Scott Thrissel Engineering Limited. Control devices for web-feeding machines. 4,285,130, Cl. 33-132.00A.
Chapman, Charles C., to Phillips Petroleum Co. Separation of products of HF alkylation. 4,286,110, Cl. 585-719.000.
Chapman, Robert D.: *See*—
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Charles, Richard J.; Prochazka, Svante; and Scott, Curtis E., to General Electric Company. Alumina ceramic. 4,285,732, Cl. 106-57.000.
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., to Precision Dynamics Corporation. Tamper-resistant identification device. 4,285,146, Cl. 40-21.00C.
Charpak, Georges; Ngoc, Hoan N.; and Policarpo, Armando, to Agence Nationale de Valorisation de la Recherche (ANVAR). Neutral radiation detection and localization. 4,286,158, Cl. 250-374.000.
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Chen, Evan N.; Crainich, Lawrence; and Ferraro, Frank A., to Warner-Lambert Company. Barber-type razor. 4,285,125, Cl. 30-53.000.
Cheng, Paul J.; and Mills, King L., to Phillips Petroleum Co. Start-up of carbon black process. 4,285,926, Cl. 423-450.000.
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deVries, Louis; and King, John M., 4,285,822, Cl. 252-46.400.
Chew, Thomas S. Float attachment for a bicycle. 4,285,674, Cl. 440-12.000.
Chi, Lawrence L.; and Kudirka, Alvydas A., to General Electric Company. Jet pump with labyrinth seal. 4,285,770, Cl. 176-65.000.
Chiang, Anne A., to Xerox Corporation. Electrophoretic display composition. 4,285,801, Cl. 204-299.00R.
Chiappetti, Arthur B. Railway vehicle energy producing system. 4,285,279, Cl. 105-118.000.
Chien, Loring C., to Dresser Industries, Inc. Rotary torque and rpm indicator for oil well drilling rigs. 4,285,236, Cl. 73-151.000.
Chipens, Gunar I.; Mutulis, Felix K.; Lando, Olga E.; and Myshlyakova, Natalia V. Cyclic analogues of callidine. 4,285,857, Cl. 260-112.50R.
Chisholm, William M., to Western Electric Co., Inc. Pin removal tool. 4,285,123, Cl. 29-764.000.
Chou, Billy J.; Yelnosky, John; and Riley, Richard L., to William H. Rorer, Inc. Method of treating scours. 4,285,972, Cl. 424-326.000.
Chow, Weichien, to Bunker Ramo Corporation. Transmission cable mass termination. 4,285,561, Cl. 339-14.00R.
Christopher, Todd J.; and Wilber, James A., to RCA Corporation. Periodically biased video disc player servo system. 4,286,282, Cl. 358-8.000.
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Habermeier, Jurgen; Knecht, Eduard; and Gisler, Rudolf, 4,286,097, Cl. 548-309.000.
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Wehner, Wolfgang; and Abeler, Gerd, 4,285,856, Cl. 260-45.75S.
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Bohart, Paul R.; and Gibbemeyer, Joseph F., 4,285,658, Cl. 425-538.000.
Cioca, Gheorghe; and Siegler, Marcel, to Seton Company. Oligopeptides derived from collagen. 4,285,986, Cl. 426-657.000.
Cipollone, John J., to Electro Pneumatic Corporation. Electronic events recording means. 4,285,483, Cl. 246-107.000.
Clancy, Douglas E.; Frankeny, Richard F.; and Olson, George P., to International Business Machines Corp. Electronic damping of stepper motor. 4,286,202, Cl. 318-696.000.
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Clark, Chester V. Rocker attachment. 4,285,543, Cl. 297-272.000.
Clark, Kenneth M., to Dresser Industries, Inc. Jet pump nozzle assembly. 4,285,638, Cl. 417-172.000.
Clark, Silas W. Compressor-assisted absorption refrigeration system. 4,285,211, Cl. 62-335.000.
Clausen, Victor H.; and Asbury, Charles E., Jr., to H. B. Fuller Company. Bonding apparatus for thermoplastic coated materials. 4,285,758, Cl. 156-498.000.
Clavin, Edward A., to Midcon Pipeline Equipment Co. Method and apparatus for double jointing pipe. 4,285,460, Cl. 228-212.000.
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Slavens, Clyde M.; and Clavin, Edward A., 4,286,138, Cl. 219-137.00R.
Clayton Dewandre Co. Ltd.: *See*—
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Cleanair Combustion Systems, Ltd.: *See*—
Gram, Anker, 4,285,709, Cl. 62-36.000.
Clemens, Jon K., to RCA Corporation. Transcoder. 4,286,283, Cl. 358-11.000.
Cloup, Jean. Isothermal chamber and heat engines constructed using said chamber. 4,285,197, Cl. 60-525.000.
CNG Research Company: *See*—
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,286,111, Cl. 174-15.0BH.
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Coats, Graham C.; Elliott, Gary A.; and Bulboaca, Michael A., to Barry-Wehmiller Company. Rotary valve for pressure fluid distribution. 4,285,365, Cl. 137-625.150.
Coca-Cola Company, The: *See*—
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Iacobucci, Guillermo A.; and Sweeny, James G., 4,285,985, Cl. 426-540.000.
Coe, Charles G., to Air Products and Chemicals, Inc. Urethane catalysis. 4,286,073, Cl. 521-126.000.
Cohen, Abraham B.; and Fan, Roxy, to Du Pont de Nemours, E. I., and Company. Process for preparation of multicolor surprint proofs with silica overcoat. 4,286,046, Cl. 430-272.000.
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Coldren, Larry A., to Bell Telephone Laboratories, Incorporated. Reactive ion etching of III-V semiconductor compounds. 4,285,763, Cl. 156-643.000.
Cole, Richard C. Retractable tonneau top. 4,285,539, Cl. 296-105.000.
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Coles, Ernest F., to Hawker Siddeley Dynamics Engr., Ltd. Electrohydraulic systems. 4,285,496, Cl. 251-130.000.
Collingwood, John C., to British Gas Corporation. Ultrasonic pipe inspection apparatus. 4,285,243, Cl. 73-623.000.
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Collins, Denver G., to State Industries, Inc. Solar heating system. 4,285,334, Cl. 126-437.000.
Collura, Peter C.; and Pierce, Chester J., Jr., to Certipak Corporation. Article carrier feeding and control apparatus. 4,285,185, Cl. 53-48.000.
Colomer, Pierre, to Interfiltre S.A. Filter with automatic cleaning. 4,285,353, Cl. 134-181.000.
Colvin, Beal H., to Inspiration Consolidated Copper Company. Tuyere sealing means and silencer. 4,285,504, Cl. 266-266.000.
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Odom, Roger K., 4,286,206, Cl. 323-244.000.
Commissariat a l'Energie Atomique: *See*—
Dewulf, Roger; Denis, Jean-Luc; Germain, Michel; and Lecointre, Christian, 4,286,140, Cl. 219-306.000.
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Crosier, Claire G.; and Waas, Charles W., 4,285,563, Cl. 339-45.00M.
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Lamy, Jacques E., 4,285,614, Cl. 405-203.000.
Compagnie Industrielle des Piles Electriques "Cipel": *See*—
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Condit, Ernest M. Wallboard patching apparatus. 4,285,183, Cl. 52-514.000.
Connely, Terrence T., to Ex-Cell-O Corporation. Head gasket assembly with metal inlays. 4,285,527, Cl. 277-235.00B.
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Sifferman, Thomas R., 4,285,356, Cl. 137-13.000.
Yang, Kang, 4,285,881, Cl. 260-458.00R.
Contastin, Andre, to Industries et Techniques d'Ameublement. Method and device for forming plastic cellular material in a mold from a foamable liquid reaction mixture. 4,285,893, Cl. 264-54.000.
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Thibodeau, Raymond J., 4,285,998, Cl. 428-35.000.
Cook, C. Glenn: *See*—
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Corey, Joseph T.; and Corey, Thomas J., to Permclip Products Corporation. Fastener device. 4,285,104, Cl. 24-153.000.
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Cornils, Boy; De Win, Werner; and Weber, Jurgen, to Ruhrchemie Aktiengesellschaft. Process for preparing carboxylic acids by catalytic oxidation of aldehydes. 4,285,875, Cl. 260-413.000.
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Nigrin, Jaroslava M., 4,285,731, Cl. 106-48.000.
Sanford, Leon M.; and Tick, Paul A., 4,285,730, Cl. 106-47.00R.
Cort, Joseph H.; and Fischman, Alan, to Mt. Sinai School of Medicine of the City University of N.Y. Vasopressin analogs. 4,285,858, Cl. 260-112.50R.
Cosentino, Salvatore. Surgical arm-sling with improved strap adjustment. 4,285,337, Cl. 128-133.000.
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Courts, Randall L.; and Wilfong, Joseph R., to Courts, Randall L. Toy for detecting magnetic fields with electrical compass contacts. 4,285,158, Cl. 46-227.000.
Cox, Ginger C.; and Scott, Sandra F. Hairstyling aid. 4,285,350, Cl. 132-9.000.
Cox, William G. Surfboard safety and control accessory. 4,285,082, Cl. 9-310.00E.
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Criss, Jeremy F. Organic material recycling method and device. 4,285,719, Cl. 71-13.000.
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Feeman, James F., 4,285,864, Cl. 260-191.000.
Cronin, Eugene J. Telephone system eavesdropping device. 4,286,113, Cl. 179-1.0MN.
Crosby, John; and Terry, Bernard W. H., to Imperial Chemical Industries Limited. Process for the manufacture of halogenated hydrocarbons. 4,285,778, Cl. 203-48.000.
Crosier, Claire G.; and Waas, Charles W., to Communications Technology Corporation. Cable connector and cap shoes therefor. 4,285,563, Cl. 339-45.00M.
Cross, Carroll N. Method of making a display mount. 4,285,683, Cl. 493-325.000.
Crouch, Alferd H. Weapon. 4,285,153, Cl. 42-84.000.
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Dahmen, Kurt; and Pfabe, Siegfried, to Chemische Fabrik. Antistatic polyurethane foams and carpet backings made therefrom. 4,286,004, Cl. 428-95.000.
Daicel Ltd.: *See*—
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Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,950, Cl. 424-256.000.
Daniel, Sam M.; and Myers, Michael H., to Motorola Inc. Adaptive array with optimal sequential gradient control. 4,286,268, Cl. 343-100.0LE.
Dannenberg, Wolfgang; and Schmand, Horst, to Riedel-de Haen Aktiengesellschaft. Process for resolution of racemic DL-α-aminocarboxylic acids. 4,285,884, Cl. 260-501.110.
Dannenmann, John E., Jr.; and Johnson, Bill E., to Bejed, Inc. Two-wire resistance bridges for private line circuits. 4,286,114, Cl. 179-1.0CN.
Daroga, Minoo J.; and Jones, Robert E., to Minnesota Mining & Manufacturing Company. Flame barrier. 4,286,013, Cl. 428-266.000.
Das, Narayan; and Misra, Surya K. Phosphate and ester coating method. 4,285,223, Cl. 72-42.000.
Dauge, Gilbert V.; and Langlais, Jacques F., to Testut-Aequitas. Load receiver with beam having elastic flection. 4,285,413, Cl. 177-210.00C.
David, Karl-Heinz; Nogaj, Alfred; and Rinkler, Heinrich, to Bayer Aktiengesellschaft. Process for stabilizing acrylonitrile polymer spinning solutions. 4,286,076, Cl. 525-221.000.
David, Nel E. Shoulder protector. 4,285,067, Cl. 2-46.000.
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Kwasnitza, Hans-Dieter, 4,285,513, Cl. 271-270.000.
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De Brouckere, Lucien C., to International Standard Electric Corporation. Device for growing a crystalline layer on a substrate. 4,285,911, Cl. 422-249.000.
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DeMartino, Edward A., to Owens-Illinois, Inc. Method for producing a plastic sleeve. 4,285,750, Cl. 156-218.000.
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Denis, Jean-Luc: *See*—
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Denny, Richard W., to Honeywell Inc. Multivibrator circuit. 4,286,234, Cl. 331-113.00R.
de Nora, Vittorio; Nidola, Antonio; and Spaziante, Placido M., to Diamond Shamrock Technologies, S.A. Electrodes for electrolytic processes, especially metal electrowinning. 4,285,799, Cl. 204-290.00F.
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Deruyttere, Andre E. A.; Delaey, Lucas J. A. E.; Aernoudt, Etienne A. D.; and Roos, Josef R., to Leuven Research and Development VZW. Process of manufacturing solid bodies of copper-zinc-aluminium alloys. 4,285,739, Cl. 148-11.50C.
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de Valroger, Pierre, to Valbrev S.A.R.L. Direct current motor unit without commutator. 4,286,198, Cl. 318-138.000.
de Villers, Paul; and Barriault, Judith, to Gestion Paul de Villers, Inc. Package arrangement for fragile articles. 4,285,432, Cl. 206-591.000.
deVries, Louis; and King, John M., to Chevron Research Company. Process for preparing a sulfurized molybdenum-containing composition and lubricating oil containing the composition. 4,285,822, Cl. 252-46.400.
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Dewulf, Roger; Denis, Jean-Luc; Germain, Michel; and Lecointre, Christian, to Commissariat a l'Energie Atomique. Apparatus for raising a liquid to a given temperature. 4,286,140, Cl. 219-306.000.
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Diakonov, Yuri G. Safety razor for trimming beards and mustaches. 4,285,124, Cl. 30-34.100.
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di Donato, Jose E. Ping-pong poker. 4,285,519, Cl. 273-30.000.
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DiGiulio, Adolph V.; and Bauer, Jack N., to Arco Polymers, Inc. Fire-retardant, rubber-modified, monocarboxylic acid copolymers. 4,286,070, Cl. 521-88.000.
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., to Du Pont de Nemours, E. I., and Company. Rotor for sedimentation field flow fractionation. 4,285,809, Cl. 209-155.000.
DiMatteo, Paul, to Solid Photography Inc. Method and apparatus for producing planar elements in the construction of surfaces and bodies. 4,285,754, Cl. 156-264.000.
Dimond, Harold L.; Odioso, Raymond C.; and Reavill, Roger E., to Drackett Company, The. Pouch bleach. 4,286,016, Cl. 428-311.000.
Dinamyk Pesquisa E. Desenvolvimento Tecnologico S/C Ltda. Tecnologia de Solucoes: *See*—
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Dinges, Kenneth N., to Braden Steel Corporation. Concealed fastener panel construction and method of installation. 4,285,182, Cl. 52-478.000.
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Dlugos, Daniel F.; Hansen, Gary G.; and Steinmetz, John H., to Pitney Bowes Inc. System and method for computing domestic and international postage. 4,286,325, Cl. 364-466.000.

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Doerr, Richard L.; and Scardera, Michael, to Olin Corporation. Process for inhibiting crust formation in reduced dye baths. 4,285,695, Cl. 8-650.000.

Doherty, Ian, to Aktiebolaget Electrolux. Interface unit for vacuum sewers. 4,285,359, Cl. 137-205.000.

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Donahue, Joseph D., to Schweitzer Industrial Corporation. Paint spray booth with flooded floor. 4,285,270, Cl. 98-115.0SB.

Donato, Guido A., to Drexel Industries, Inc. Fork lift truck with plate glass handling attachment. 4,285,626, Cl. 414-622.000.

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Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,285,834, Cl. 252-429.00C.
Miller, Arnold B.; and Casper, Herman F., 4,285,896, Cl. 264-127.000.

Dowbenko, Rostyslaw; Schimmel, Karl F.; and Seiner, Jerome A., to PPG Industries, Inc. Amidation reaction products of polyamines and polycarboxyl containing materials and coating compositions containing same. 4,285,849, Cl. 260-29.6NR.

Downs, Robert E., to Westinghouse Electric Corp. Nuclear core and fuel assemblies. 4,285,771, Cl. 176-76.000.

Drackett Company, The: *See*—
Dimond, Harold L.; Odioso, Raymond C.; and Reavill, Roger E., 4,286,016, Cl. 428-311.000.

Draf Tool Co., Inc.: *See*—
Koser, Richard, 4,285,206, Cl. 62-126.000.

Dreishev, Igor I.: *See*—
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.

Dresser Industries, Inc.: *See*—
Chien, Loring C., 4,285,236, Cl. 73-151.000.
Clark, Kenneth M., 4,285,638, Cl. 417-172.000.

Drexel Industries, Inc.: *See*—
Donato, Guido A., 4,285,626, Cl. 414-622.000.

Drexler, Ferenc: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,865, Cl. 260-239.30P.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,950, Cl. 424-256.000.

Du-Al Manufacturing Company, Division of Core Industries, Inc.: *See*—
Jankowski, Edward M., 4,285,628, Cl. 414-739.000.

Dubach, Harry. Bearing puller alignment tool. 4,285,111, Cl. 29-263.000.

Dubois, Jean-Claude: *See*—
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,285,788, Cl. 204-159.160.

Ducourant, Jacques F. Hand held skiing stabilizer. 4,285,530, Cl. 280-809.000.

Dudynskyj, Peter P., to General Motors Corporation. Wheelchair lift device. 4,285,416, Cl. 187-9.00R.

Dugan, Charles; and Dugan, Timothy, to Farm Fresh Shrimp Corporation. Method and apparatus for rearing post-larvae shrimp. 4,285,298, Cl. 119-2.000.

Dugan, Timothy: *See*—
Dugan, Charles; and Dugan, Timothy, 4,285,298, Cl. 119-2.000.

Dugger, Doyle L., to Bandag Incorporated. Method and apparatus for non-destructive inspection of tires. 4,285,235, Cl. 73-146.000.

Duhl, Daniel, to Polylok Corporation. Single bar, warp lift-off-resistant, lofted fabric construction. 4,285,216, Cl. 66-192.000.

Dunkerly, Cedric A., II, to American Can Company. Apparatus for the manufacture of fibrous webs. 4,285,647, Cl. 425-82.100.

Dunmire, David L.: *See*—
Otto, Susan E.; and Dunmire, David L., 4,285,698, Cl. 23-230.00B.

Du Pont de Nemours, E. I., and Company: *See*—
Allen, Richard B.; and Patten, Thomas E., 4,285,759, Cl. 156-584.000.
Cohen, Abraham B.; and Fan, Roxy, 4,286,046, Cl. 430-272.000.
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,285,809, Cl. 209-155.000.
Forster, Ralf-Udo P.; and Metzger, Rolf H. F., 4,286,055, Cl. 430-567.000.
Kirkland, Joseph J.; and Yau, Wallace W., 4,285,810, Cl. 209-155.000.
Taylor, Harvey W., Jr., 4,286,043, Cl. 430-253.000.

Duppman, Gilbert F.: *See*—
Von Osten, Jewell; and Duppman, Gilbert F., 4,285,486, Cl. 248-316.00B.

Durant, Graham J.; and Miles, Peter D., to Smith Kline & French Laboratories Limited. Pyridyl, thiazolyl and isothiazolyl alkyl bisamidines. 4,285,952, Cl. 424-263.000.

Durst AG Fabrik Fototechnischer Apparate: *See*—
Vinatzer, Alex, 4,285,593, Cl. 355-68.000.

Dyben, Jerry F.: *See*—
Pilat, Eugene R.; Franks, George J., Jr.; and Dyben, Jerry F., 4,286,305, Cl. 361-172.000.

Dye, John F.; and Lowe, Earl L., to Ball Corporation. Plastic preform. 4,286,000, Cl. 428-64.000.

Dyer, Harry F., to American Box Company. Wall construction for wire-bound boxes having split cleats. 4,285,439, Cl. 217-45.000.

Dyneer Corporation: *See*—
Kraft, Derald H., 4,285,676, Cl. 474-135.000.

E M I Limited: *See*—
Franklin, Donald P., 4,286,333, Cl. 375-1.000.

E-Systems, Inc.: *See*—
Gershberg, David N.; Lee, Alexander Y., Jr.; and Moore, William B., 4,286,260, Cl. 340-554.000.
Shearer, Harry D., 4,286,223, Cl. 329-50.000.

E. T. Marler Limited: *See*—
Reed, Kenneth J.; and Lythgoe, Alan L., 4,286,008, Cl. 428-195.000.

East, Anthony J., to Celanese Corporation. Anisotropic wholly aromatic polyester derived from 4-hydroxy-4'-carboxy azobenzene and process for preparation. 4,285,852, Cl. 260-37.00R.

Eastman Kodak Company: *See*—
Mir, Jose M., 4,285,588, Cl. 354-137.000.

Eaton Corporation: *See*—
Maltby, Edgar W., 4,285,467, Cl. 236-86.000.
Zukausky, Keith E., 4,285,499, Cl. 251-229.000.

Eberhard, Riessland; Beyer, Helmut; and Kossman, Erich. Two-coordinate positioning device. 4,286,197, Cl. 318-38.000.

Eberle, William J.; and Reber, Timothy M., to General Battery Corporation. Apparatus for separating battery plates. 4,285,257, Cl. 83-167.000.

Eberle, William J.: *See*—
Hawrylo, Stan; Neukirch, Ed; and Eberle, William J., 4,285,537, Cl. 294-93.000.

Eblen, Ewald; Hofmann, Karl; and Kopse, Odon, to Robert Bosch GmbH. Fuel injection nozzle. 4,285,471, Cl. 239-533.400.

Edelmann, Hans A. K., to Prakla-Seismos GmbH. Method and apparatus for producing shear waves for subsurface geophysical investigation. 4,286,332, Cl. 367-75.000.

Edling, Theodore L. Mechanical steel for sharpening blades. 4,285,253, Cl. 76-84.000.

Edwards, Diane B., to Alberto-Culver Company. Liquid composition for application to the skin. 4,285,973, Cl. 424-358.000.

Edwards, Lynn D.: *See*—
Terrill, Garrett D.; and Edwards, Lynn D., 4,285,368, Cl. 138-89.000.

Edwards, Philip D.: *See*—
Kubela, Rudolf; Edwards, Philip D.; and Hughes, Lisa A., 4,286,095, Cl. 546-213.000.

Egli, Hermann; and Engeler, Emil, to Sandoz Ltd. Alkoxylated fatty amines and polyamines as reserving agents. 4,285,691, Cl. 8-455.000.

Egyt Gyogyszervegyeszeti Gyar: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszelly, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Ehret, Robert J., to Beckman Instruments, Inc. Slip frequency control for variable speed induction motors. 4,286,203, Cl. 318-801.000.

Ehrich, Hans-Jurgen: *See*—
Gedrat, Klaus; Ehrich, Hans-Jurgen; Mahlkow, Hartmut; and Wolff, Joachim, 4,285,991, Cl. 427-97.000.

Eichler, Jay H.; and Gasparaitis, Bernard, to Motorola, Inc. Coaxial dual antenna connection arrangement for communications apparatus. 4,286,335, Cl. 455-89.000.

Eickel, Rolf; and Tolksdorf, Dieter, to Agfa-Gevaert Aktiengesellschaft. Apparatus for ascertaining and/or regulating the amounts of radiation in the making of X-ray images. 4,286,157, Cl. 250-370.000.

Eidenschink, Rudolf; Pohl, Ludwig; Weber, Georg; and Del Pino, Fernando, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid-crystalline dielectric. 4,285,829, Cl. 252-299.630.

Eilers, Hans-Reiner: *See*—
Holzkampfer, Gunter; and Eilers, Hans-Reiner, 4,285,178, Cl. 52-187.000.

Einhorn, Ruediger, to Coats & Clark, Inc. General purpose hollow wall toggle fastener. 4,285,264, Cl. 411-345.000.

Einset, Eystein; and Hageman, James R., to Whirlpool Corporation. Bi-rotational microwave oven turntable/rotisserie. 4,286,133, Cl. 219-10.55F.

Eisai Co., Ltd.: *See*—
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,285,940, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Ejiri, Masakazu: *See*—
Uno, Takeshi; Ueda, Hirotada; Ikeda, Sadahiro; Ejiri, Masakazu; and Matsuoka, Shinji, 4,286,146, Cl. 235-456.000.

Ekstrom, Howard B.: *See*—
Ekstrom, James R.; and Ekstrom, Howard B., 4,285,196, Cl. 60-499.000.

Ekstrom, James R.; and Ekstrom, Howard B. Wave power generator. 4,285,196, Cl. 60-499.000.

Electro-Craft Corporation: *See*—
Fryer, Ronald W.; and Guerra, Jess, 4,285,595, Cl. 356-150.000.

Electro Pneumatic Corporation: *See*—
Cipollone, John J., 4,285,483, Cl. 246-107.000.

Elgart, Alan. Microscope stage. 4,285,568, Cl. 350-90.000.

Elliott, Gary A.: *See*—
Coats, Graham C.; Elliott, Gary A.; and Bulboaca, Michael A., 4,285,365, Cl. 137-625.150.

Ellis, Derrick S.: *See*—
Simmons, William B., Sr.; and Ellis, Derrick S., 4,285,335, Cl. 126-447.000.

Elliston, Thomas L. Fire fighting boom assembly for service vessel. 4,285,629, Cl. 414-740.000.

Elmer, Otto C., to General Tire & Rubber Company, The. Adhesion of polyamide or polyester cords to EPDM rubber. 4,285,756, Cl. 156-334.000.

Elser, Dieter, to Zahnradfabrik Friedrichshafen, AG. Servo steering gear. 4,285,266, Cl. 91-375.00A.

Elser, Dieter, to Zahnradfabrik Friedrichshafen, AG. Pressure medium control system for auxiliary power steering systems. 4,285,366, Cl. 137-625.230.

Elspass, Chester W.: *See*—
Bellows, Richard J.; Grimes, Patrick G.; and Elspass, Chester W., 4,285,794, Cl. 204-260.000.

Elston, Gary W.: *See*—
Auld, Bertram A.; and Elston, Gary W., 4,286,216, Cl. 324-237.000.

Ely, Stephen R.: *See*—
Klotz, Marvin R.; and Ely, Stephen R., 4,285,919, Cl. 423-277.000.

Ema, Hideaki: *See*—
Nishizima, Hideyo; Ema, Hideaki; Tamura, Hiroshi; and Akiyoshi, Hideki, 4,286,035, Cl. 430-85.000.

Emhart Industries, Inc.: *See*—
French, George R.; and Oliver, John S., 4,286,208, Cl. 324-61.00R.
Vana, John H., 4,285,204, Cl. 62-81.000.

Empresa Nacional Siderurgica, S.A. (Ensidesa): *See*—
Tornos Garcia, Adolfo; Felgueroso Ruiz, Alejandro; and Diaz Fernandez-Raigoso, Aurelio, 4,285,229, Cl. 73-40.000.

Enga, Bernard E., to Johnson, Matthey & Co., Limited. Engines. 4,285,665, Cl. 431-328.000.

Engeler, Emil: *See*—
Egli, Hermann; and Engeler, Emil, 4,285,691, Cl. 8-455.000.

Engelhardt & Foster: *See*—
Grunewald, Heinz L., 4,285,219, Cl. 68-19.200.

Englemann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, to VEB Filmfabrik Wolfen. Light sensitive, color photographic silver halide compositions with DIR-couplers. 4,286,054, Cl. 430-544.000.

Enjoyable Products, Inc.: *See*—
Leinberry, W. Stanley, 4,285,074, Cl. 4-227.000.

Environmental Chemicals, Inc.: *See*—
Himel, Chester M.; and Cardarelli, Nathan F., 4,286,020, Cl. 428-407.000.

Envirosol Systems International, Ltd.: *See*—
Vasishth, Ramesh C.; and De Silva, Dodwell P., 4,285,997, Cl. 427-393.000.

Eppendorf Geratebau Netherler + Hinz GmbH: *See*—
Schmidt-Rabenau, Hartmut; and Berger, Hans-Werner, 4,285,791, Cl. 204-195.00M.

Epsztein, Bernard; and Fleury, George, to Thomson-CSF. Delay line with coupled cavities. 4,286,191, Cl. 315-3.600.

Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, to Thomson-CSF. Family of compounds crosslinkable by photon irradiation. 4,285,788, Cl. 204-159.160.

Erb, Edgar M.: *See*—
Heiser, Joseph I.; and Erb, Edgar M., 4,286,028, Cl. 429-82.000.

Erhardt, Peter F.: *See*—
Lu, Chin H.; and Erhardt, Peter F., 4,286,038, Cl. 430-108.000.

Erickson, Jalmer W. Underground in situ leaching of ore. 4,285,548, Cl. 299-2.000.

Erickson, John W., to Kobe, Inc. Electric and hydraulic powered thermal stimulation and recovery system and method for subterranean wells. 4,285,401, Cl. 166-303.000.

Erickson, John W., to Kobe, Inc. Oil drying system for motors. 4,286,185, Cl. 310-87.000.

Ericson, Alvin E.: *See*—
Walitalo, Charles R.; and Ericson, Alvin E., 4,285,681, Cl. 493-194.000.

Eriksson, Kjell R. A. Apparatus for measuring the particle size range in a suspension. 4,285,231, Cl. 73-63.000.

Ermachkov, Vladimir G.; and Zhavoronkin, Vladimir G. Rotobaler. 4,285,190, Cl. 56-341.000.

Ernsberger, Fred M., to PPG Industries, Inc. Stained glass photomasks and method of making by electrodealkalization. 4,285,988, Cl. 427-12.000.

Ernsberger, Fred M., to PPG Industries, Inc. Method for making stained glass photomasks using stabilized glass. 4,286,052, Cl. 430-330.000.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,285,112, Cl. 29-407.000.

Esmil B.V.: *See*—
Gallottini, Emilio, 4,285,815, Cl. 210-400.000.

Essex Group, Inc.: *See*—
Staley, Ronald W.; and Roberts, Jonathan W., 4,286,010, Cl. 428-215.000.

Estee Lauder Inc.: *See*—
Gubernick, Joseph; Rosenstreich, Joseph; and Clapp, Lois A., 4,285,967, Cl. 424-289.000.

Etablissements Generaux de Mecanique de l'Ouest: *See*—
Bronnec, Jean A. L., 4,285,653, Cl. 425-324.100.

Etherington, Michael, to Dosco Overseas Engineering Ltd. Tunnel profile control. 4,285,546, Cl. 299-1.000.

Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, to Bayer Aktiengesellschaft. Dehydropeptide compounds, their production and their medical use. 4,285,935, Cl. 424-177.000.

Evangelisti, Carlo J.: *See*—
Baker, David C.; Bantz, David F.; and Evangelisti, Carlo J., 4,286,321, Cl. 364-200.000.

Evans, Steven J.: *See*—
Shively, James F.; Evans, Steven J.; Jory, Howard R.; and Mizuhara, Yosuke M., 4,286,240, Cl. 333-252.000.

Evetts, Jonathan. Roll compression member. 4,285,616, Cl. 405-215.000.

Ewikon Entwicklung und Konstruktion GmbH & Co. Kommanditgesellschaft: *See*—
Mueller, Walter, 4,285,660, Cl. 425-549.000.

Ewins, Earle E.: *See*—
St. Clair, David J.; and Ewins, Earle E., 4,286,077, Cl. 525-232.000.

Ex-Cell-O Corporation: *See*—
Connely, Terrence T., 4,285,527, Cl. 277-235.00B.
Wunder, William G., 4,285,384, Cl. 164-1.000.

Excelsior Tool Corp.: *See*—
Romeo, Richard F., 4,285,254, Cl. 81-58.100.

Exxon Nuclear, Inc.: *See*—
Bray, Lane A.; Boldt, Allyn L.; and Van Tuyl, Harold H., 4,285,891, Cl. 264-0.500.

Exxon Research & Engineering Co.: *See*—
Baker, Richard H., 4,286,175, Cl. 307-581.000.
Bellows, Richard J.; Grimes, Patrick G.; and Elspass, Chester W., 4,285,794, Cl. 204-260.000.
Brois, Stanley J.; and Gutierrez, Antonio, 4,286,096, Cl. 548-130.000.
Lyon, Richard K.; and Freund, Howard, 4,285,283, Cl. 110-347.000.
Makowski, Henry S.; and Lundberg, Robert D., 4,285,851, Cl. 260-29.6SQ.
Moustakas, Theodore D., 4,285,762, Cl. 156-643.000.
Shaw, Henry; and Skopp, Alvin, 4,285,193, Cl. 60-39.060.
Shropshire, Joseph A.; and Grimes, Patrick G., 4,286,027, Cl. 429-18.000.

Facet Enterprises, Inc.: *See*—
Brown, Ralph V., 4,286,200, Cl. 318-443.000.
Sekella, Thomas C., 4,285,420, Cl. 192-84.00C.

Fadler, Kurt; and Werner, Karl-Heinz, to Fichtel & Sachs AG. Clutch disc assembly. 4,285,423, Cl. 192-106.200.

Fagre, Raymond C., Jr., to Pallet Service Corporation. Pallet disassembling device. 4,285,110, Cl. 29-252.000.

Fahey, Dennis M., to PPG Industries, Inc. Polymer sizing compositions and methods yielding sized glass fibers having reduced tackiness. 4,286,019, Cl. 428-3[illegible]1.000.

Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., to Hoffmann-La Roche Inc. Adrenergic blocking agents. 4,285,873, Cl. 260-348.450.

Fairbank, Paul, to Simon-Solitec Limited. Suspension for bin discharging device. 4,285,447, Cl. 222-200.000.

Fairchild, Incorporated: *See*—
Lee, Charles A., 4,285,816, Cl. 210-401.000.

Falck, Glenn H.; and Boose, James R., to Koppers Company, Inc. Seal plate drive for use with apparatus for pressure feeding and pressure cooking a food product. 4,285,271, Cl. 99-348.000.

Fan, Roxy: *See*—
Cohen, Abraham B.; and Fan, Roxy, 4,286,046, Cl. 430-272.000.

Farabaugh, Aloysius W., to PPG Industries, Inc. Method of determining optical quality of a laminated article. 4,285,745, Cl. 156-64.000.

Faris, Edwin E.: *See*—
Stewart, James B.; Woltmann, Klaus W.; Faris, Edwin E.; and Schmidt, Sheldon P., 4,285,813, Cl. 210-169.000.

Farm Fresh Shrimp Corporation: *See*—
Dugan, Charles; and Dugan, Timothy, 4,285,298, Cl. 119-2.000.

Farmitalia Carlo Erba, S.p.A.: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; and Cesarani, Roberto, 4,285,966, Cl. 424-285.000.

Fatula, Joseph J., Jr.; and Roberts, Stanley, to International Business Machines Corporation. Process for selectively forming refractory

metal silicide layers on semiconductor devices. 4,285,761, Cl. 156-628.000.

Faustini, Franco: *See—*
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; and Cesarani, Roberto, 4,285,966, Cl. 424-285.000.

Fedder, Richard C.: *See—*
Shell, Ronald G.; Brownell, Wallace F.; Fedder, Richard C.; and Christou, Kyriakos, 4,286,274, Cl. 346-75.000.

Federal Signal Corporation: *See—*
Gosswiller, Earl W., 4,286,254, Cl. 340-84.000.

Fedorova, Ljudmila M.: *See—*
Shkatov, Alexandr S.; Mazurovsky, Boris Y.; Sokolov, Vasily I.; Dmitrichenko, Viktor A.; Nazarova, Sima I.; and Fedorova, Ljudmila M., 4,285,224, Cl. 72-56.000.

Fedoseev, Viktor P.: *See—*
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Fedotov, Mikhail T.: *See—*
Glukhikh, Vasily A.; Sviniin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.

Feeman, James F., to Crompton & Knowles Corporation. Disulfonic phenyl-azo-naphthyl-azo-phenyl alkoxy dyes for polyamides. 4,285,864, Cl. 260-191.000.

Feinberg, Stewart C.; Lundsager, Christian B.; Lundquist, Joseph T., Jr.; and Balouskus, Robert A., to W. R. Grace & Co. Method of forming an improved battery separator. 4,285,751, Cl. 156-242.000.

Feit, Richard. Method and article for dispersing a volatilizable compound in an environment. 4,285,905, Cl. 422-4.000.

Felgueroso Ruiz, Alejandro: *See—*
Tornos Garcia, Adolfo; Felgueroso Ruiz, Alejandro; and Diaz Fernandez-Raigoso, Aurelio, 4,285,229, Cl. 73-40.000.

Fennern, Larry E.: *See—*
Specker, Steven R.; Sawyer, Craig D.; Crowther, Russell L.; Gitnick, Bennett J.; Walters, Kenneth V.; Brown, Robert E.; and Fennern, Larry E., 4,285,769, Cl. 176-30.000.

Ferraino, Peter R., to PPG Industries, Inc. Method of and apparatus for severing edges of a glass sheet. 4,285,451, Cl. 225-2.000.

Ferranti Limited: *See—*
Sligh, Alistair D. M.; and Pitches, Brian E., 4,286,252, Cl. 340-27.0SS.

Ferraro, Frank A.: *See—*
Chen, Evan N.; Crainich, Lawrence; and Ferraro, Frank A., 4,285,125, Cl. 30-53.000.

Ferres, Harry, to Beecham Group Limited. Penicillin compositions. 4,285,960, Cl. 424-271.000.

Fetchu, David C.; and Weidman, William H., to General Tire & Rubber Company, The. Extrusion die head and method of making the same. 4,285,651, Cl. 425-192.00R.

Fiber Industries, Inc.: *See—*
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,285,748, Cl. 156-167.000.
Waite, Roland, 4,285,646, Cl. 425-72.00S.

Fichtel & Sachs AG: *See—*
Fadler, Kurt; and Werner, Karl-Heinz, 4,285,423, Cl. 192-106.200.

Filter Specialists, Inc.: *See—*
Morgan, Howard W., Jr., 4,285,814, Cl. 210-315.000.

Finnemore, Fred M.: *See—*
Van Allen, David; and Finnemore, Fred M., 4,285,589, Cl. 354-145.000.

Firestone Tire & Rubber Company, The: *See—*
Bohm, George G. A.; and Gross, Stanley S., 4,285,654, Cl. 425-327.000.

Fisch, Michael A.: *See—*
Halle, Reidar; Peterson, David; Fisch, Michael A.; and Liauw, Koei-Liang, 4,285,877, Cl. 260-453.0RZ.

Fischer, Axel, to International Standard Electric Corp. RF Power amplifier with a modulating facility. 4,286,236, Cl. 332-10.000.

Fischer & Porter Co.: *See—*
Jones, Richard A., 4,285,357, Cl. 137-85.000.

Fischman, Alan: *See—*
Cort, Joseph H.; and Fischman, Alan, 4,285,858, Cl. 260-112.50R.

Fisher, Dennis H.: *See—*
Norton, Richard V.; and Fisher, Dennis H., 4,286,109, Cl. 585-14.000.

Flamme, Walter; and Mielke, Willi, to Peltzer & Ehlers GmbH & Co. Wire insertion apparatus, particularly for forming presses. 4,285,453, Cl. 226-142.000.

Fleury, George: *See—*
Epsztein, Bernard; and Fleury, George, 4,286,191, Cl. 315-3.600.

Flinders Surfing Co. Pty. Ltd.: *See—*
Wilson, Jonathan H., 4,285,083, Cl. 9-310.00E.

Flinn, David R.; and Manger, Cheryl L., to United States of America, Interior. Process of electroplating a platinum-rhodium alloy coating. 4,285,784, Cl. 204-39.000.

Flook, Glen E., Jr.: *See—*
Harvey, William J.; Flook, Glen E., Jr.; and LeFever, Randall H., 4,286,307, Cl. 362-15.000.

Flotow, Richard A.: *See—*
Sink, William H.; and Flotow, Richard A., 4,285,424, Cl. 192-111.00B.

Flynn, Charles M., Jr.; Carnahan, Thomas G.; and Lindstrom, Roald E., to United States of America, Interior. Recovery of bismuth from chloride process solutions. 4,285,912, Cl. 423-43.000.

FMC Corporation: *See—*
Gold, Kenneth S., 4,285,240, Cl. 73-462.000.
Ragan, Marshall P., 4,285,136, Cl. 33-203.180.

Follows, James S. Shelf and clothes rod assembly for a closet. 4,285,484, Cl. 248-235.000.

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Pugh, Ralph A.; and Ford, Kenneth L., 4,286,152, Cl. 250-281.000.

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Fox, David H.; Kuhn, Robert L.; and Kostan, Charles C., 4,285,306, Cl. 123-146.50A.
Mangels, John A.; and Tennenhouse, Gerald J., 4,285,895, Cl. 264-65.000.

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Fortune, William S. Desoldering system for use with a soldering instrument. 4,285,091, Cl. 15-310.000.

Fowler, Thomas P., to Research Products Corporation. Energy sensor. 4,286,213, Cl. 324-127.000.

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Ziskind, Stephen A., 4,285,441, Cl. 220-231.000.

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Henningsson, Filip, 4,285,619, Cl. 408-1.00R.

Frank, Robert G., to PPG Industries, Inc. Cycle of mold movement while press bending glass sheets. 4,285,715, Cl. 65-106.000.

Frankeny, Richard F.: *See—*
Clancy, Douglas E.; Frankeny, Richard F.; and Olson, George P., 4,286,202, Cl. 318-696.000.

Franklin, Donald P., to E M I Limited. Data transmission. 4,286,333, Cl. 375-1.000.

Franklin Electric Co., Inc.: *See—*
Genheimer, Stephen R.; Whitney, John A.; and Reinhard, Linda M., 4,286,303, Cl. 361-24.000.

Franklin, Reginald T. Method of using vacuum lifted blade sharpener for rotary mowers. 4,285,169, Cl. 51-288.000.

Franks, George J., Jr.: *See—*
Pilat, Eugene R.; Franks, George J., Jr.; and Dyben, Jerry F., 4,286,305, Cl. 361-172.000.

Franks, Lawrence A., to Burr Oak Tool & Gauge Company. Fin collection and transport apparatus. 4,285,256, Cl. 83-100.000.

Franks, Robert L., Jr., to Well Tools, Inc. Reverse circulating tool. 4,285,408, Cl. 175-325.000.

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Niebes, Paul; Vincze, Andras; Roba, Joseph; Lambelin, Georges; Matagne, Daniel; Hanon, Etienne; and Franz, Michel, 4,285,964, Cl. 424-283.000.

Franzone, Jose S., to Istituto Biologico Chemioterapico "ABC" S.p.A. Pharmaceutical compositions having anti-ulcer activity. 4,285,962, Cl. 424-274.000.

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Fraula, Louis F.: *See—*
McMahon, William H.; Fraula, Louis F.; Athey, Stuart E.; Johnson, Thomas M.; and Moore, Terrence W., 4,285,352, Cl. 134-48.000.

French, George R.; and Oliver, John S., to Emhart Industries, Inc. Fluid interface detector. 4,286,208, Cl. 324-61.00R.

French Masterpieces, Inc.: *See—*
Batstone, Roger J., 4,285,078, Cl. 4-661.000.

Frenzel, Jurgen, to ARBED. Method of manufacturing railway sleepers. 4,285,115, Cl. 29-460.000.

Freund, Howard: *See—*
Lyon, Richard K.; and Freund, Howard, 4,285,283, Cl. 110-347.000.

Frick, Berndt E. Table and a table support. 4,285,281, Cl. 108-147.000.

Fricker, Rene, to Sandoz Ltd. Detergent compositions. 4,285,840, Cl. 252-546.000.

Friend, Clifford K., to Xerox Corporation. High voltage sine wave power supply. 4,286,316, Cl. 363-131.000.

Fritz, James A.: *See—*
Fritz, William J.; Fritz, James A.; and Fritz, Lawrence D., 4,285,328, Cl. 126-225.000.

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Fritz, William J.; Fritz, James A.; and Fritz, Lawrence D., 4,285,328, Cl. 126-225.000.

Fritz, William J.; Fritz, James A.; and Fritz, Lawrence D. Agricultural waste burning heater and heating method. 4,285,328, Cl. 126-225.000.

Frohberger, Paul-Ernst: *See*—
Kabbe, Hans-Joachim; Frohberger, Paul-Ernst; and Roessler, Peter, 4,285,965, Cl. 424-283.000.

Fromson, Howard A.; and Gracia, Robert F., to Fromson, Howard A. Method for printing employing lithographic fountain dampening solution. 4,285,276, Cl. 101-451.000.

Frosch, Robert A.: *See*—
Taback, Israel; and Frosch, Robert A., 4,286,209, Cl. 324-71.0CP.

Fryer, Ronald W.; and Guerra, Jess, to Electro-Craft Corporation. Modular encoder. 4,285,595, Cl. 356-150.000.

Fuji Photo Film Co., Ltd.: *See*—
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,286,045, Cl. 430-270.000.
Sakai, Nobuo; Hayashi, Hiroshi; Toriuchi, Masaharu; and Katoh, Kazunobu, 4,286,042, Cl. 430-216.000.
Shirahata, Ryuji; and Kitamoto, Tatsuji, 4,286,299. Cl. 360-113.000.

Fuji Photo Optical Co., Ltd.: *See*—
Numata, Saburo, 4,285,585, Cl. 354-33.000.

Fujimi Kenmazai Kogyo Co., Ltd.: *See*—
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshdyama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.

Fukuda, Makoto: *See*—
Wagu, Masakatsu; Fukuda, Makoto; and Suzuki, Shirou, 4,285,797, Cl. 204-290.00R.

Fukuda, Tamotsu: *See*—
Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,285,319, Cl. 123-585.000.

Fukushima, Tunekazu; and Funakoshi, Satoshi, to Green Cross Corporation, The. Process for concentrating blood coagulation Factor XIII derived from human placentae. 4,285,933, Cl. 424-105.000.

Fulda, Rainer: *See*—
Gammel, Josef; and Fulda, Rainer, 4,286,334, Cl. 375-40.000.

Fumagalli, Angelo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; and Cesarani, Roberto, 4,285,966, Cl. 424-285.000.

Funakoshi, Satoshi: *See*—
Fukushima, Tunekazu; and Funakoshi, Satoshi, 4,285,933, Cl. 424-105.000.

Furst, Andor; Keller, Peter; and Muller, Marcel, to Hoffmann-La Roche Inc. D-Homopregnanes. 4,285,880, Cl. 260-455.00R.

Furukawa, Hiroshi; and Tsuyuri, Takehiko, to Sumitomo Rubber Industries, Ltd. Curable composition for hard rubber and the use thereof. 4,285,381, Cl. 152-362.00R.

Furukawa, Takashi; and Koyama, Kazuo, to Nippon Steel Corporation. Process for producing high-strength, low yield ratio and high ductility dual-phase structure steel sheets. 4,285,741, Cl. 148-12.00D.

Gabriel, Wolfgang. Mortise lock for locking a removable tooth-replacement prosthesis. 4,285,672, Cl. 433-172.000.

Gakko Hojin Takai University: *See*—
Kato, Yoshio; Seki, Kazuichi; and Shimizu, Yoshio, 4,285,636, Cl. 416-197.00A.

Galbraith, William, to Riker Laboratories, Inc. Process for isolating active debriding agent from bromelain. 4,286,064, Cl. 435-219.000.

Galli, Remo; Gozzo, Franco; Palla, Ottorino; and Longoni, Angelo, to Montedison S.p.A. Pyrethroids. 4,285,969, Cl. 424-304.000.

Gallottini, Emilio, to Esmil B.V. Vacuum filter belt apparatus. 4,285,815, Cl. 210-400.000.

Gammel, Josef; and Fulda, Rainer, to Siemens Aktiengesellschaft. Microprocessor controlled iterative switching FM/PM receiver for reconstructing noise-corrupted redundantly transmitted information. 4,286,334, Cl. 375-40.000.

Gancia, Emanuele, to Innocenti Santeustacchio S.p.A. Mandrel-holder for a pilger rolling mill. 4,285,226, Cl. 72-208.000.

Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; and Cesarani, Roberto, to Farmitalia Carlo Erba, S.p.A. Certain 15-epi-prostacyclins. 4,285,966, Cl. 424-285.000.

Gardiner, Kenneth W.: *See*—
Landa, Benzion; Swidler, Ronald; and Gardiner, Kenneth W., 4,286,039, Cl. 430-119.000.

Garland, Thomas H.; and Zimmerman, Michael T., to Bell & Howell Company. Light gating methods and apparatus. 4,285,576, Cl. 350-387.000.

Garner, Andrew, to Pulp and Paper Research Institute of Canada. Monitor assembly for electrochemical corrosion protection of stainless steel bleach plant washers. 4,285,232, Cl. 73-86.000.

Garner, Andrew; and Laliberte, Laurent H., to Pulp and Paper Research Institute of Canada. Electrochemical corrosion protection of stainless steel bleach plant washers. 4,285,787, Cl. 204-147.000.

Garrett Corporation, The: *See*—
Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,285,200, Cl. 60-607.000.

Garrett, Robert W., Sr.; Horning, Donald E.; and Merkel, Dennis L., to Western Electric Co., Inc. Method and apparatus for removing dice from a severed wafer. 4,285,433, Cl. 209-573.000.

Garrett, William R.; and Young, David E., to Smith International, Inc. Drilling head. 4,285,406, Cl. 175-195.000.

Gasche, Charles J.: *See*—
Bonta, Anthony R.; and Gasche, Charles J., 4,285,491, Cl. 249-102.000.

Gasparaitis, Bernard: *See*—
Eichler, Jay H.; and Gasparaitis, Bernard, 4,286,335, Cl. 455-89.000.

Gatsis, John G.: *See*—
Braun, Richard; Johnson, Russell W.; and Gatsis, John G., 4,285,803, Cl. 208-48.0AA.

Gatzi, Karl; Baumann, Hanspeter; Kunz, Walter; and Gloor, Bernhard, to Ciba-Geigy Corporation. 3-(N-1,3,4-Thiadiazolyl-2)-aminoalkyl-alkyl-acrylates and use thereof as bactericides. 4,285,959, Cl. 424-270.000.

Gazard, Maryse: *See*—
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,285,788, Cl. 204-159.160.

Gearhiser, Hartman L.: *See*—
Vogel, Orville A., 4,285,348, Cl. 130-30.00H.

Gedrat, Klaus; Ehrich, Hans-Jurgen; Mahlkow, Hartmut; and Wolff, Joachim, to Schering AG. Method for producing printed circuits. 4,285,991, Cl. 427-97.000.

General Battery Corporation: *See*—
Eberle, William J.; and Reber, Timothy M., 4,285,257, Cl. 83-167.000.
Hawrylo, Stan; Neukirch, Ed; and Eberle, William J., 4,285,537, Cl. 294-93.000.
Heiser, Joseph I.; and Erb, Edgar M., 4,286,028, Cl. 429-82.000.

General Box Company: *See*—
Wait, Hershey, 4,285,438, Cl. 217-43.00A.

General Dynamics, Pomona Division: *See*—
Palmer, John P., 4,286,145, Cl. 235-454.000.

General Electric Company: *See*—
Balchunas, Charles A., 4,285,145, Cl. 38-77.700.
Bochan, John, 4,285,214, Cl. 64-15.00B.
Charles, Richard J.; Prochazka, Svante; and Scott, Curtis E., 4,285,732, Cl. 106-57.000.
Chi, Lawrence L.; and Kudirka, Alvydas A., 4,285,770, Cl. 176-65.000.
Habegger, Richard J., 4,285,119, Cl. 29-596.000.
Honsinger, Vernon B.; and Tompkins, Russell E., 4,286,188, Cl. 310-162.000.
Jacques, Joseph L., Jr.; Smith, Michael D.; and Yehl, Gregory C., 4,286,246, Cl. 337-94.000.
Jaquiss, Donald B. G.; Mark, Victor; and Mitchell, Lawrence C., 4,286,085, Cl. 528-199.000.
Kochanowski, John E., 4,286,083, Cl. 528-173.000.
Komanduri, Rangachary, 4,285,324, Cl. 125-11.00R.
Lenz, Henry G., 4,286,182, Cl. 310-61.000.
Mark, Victor, 4,286,084, Cl. 528-199.000.
Mark, Victor, 4,286,086, Cl. 528-199.000.
McCarty, William J., 4,285,210, Cl. 62-325.000.
Milkovic, Miran, 4,286,214, Cl. 324-142.000.
Nash, Dudley O., 4,285,194, Cl. 60-261.000.
Owens, Michael; Waldroup, Roy W.; and Halper, Warren, 4,286,302, Cl. 361-15.000.
Prada, Luis E., 4,285,212, Cl. 62-344.000.
Specker, Steven R.; Sawyer, Craig D.; Crowther, Russell L.; Gitnick, Bennett J.; Walters, Kenneth V.; Brown, Robert E.; and Fennern, Larry E., 4,285,769, Cl. 176-30.000.
Vakil, Himanshu B., 4,285,203, Cl. 60-652.000.
Watrous, Donald L., 4,286,205, Cl. 322-8.000.
Wong, Joe, 4,285,839, Cl. 252-519.000.

General Foods Corporation: *See*—
Yezek, Milton; and Adams, Joan M., 4,285,977, Cl. 426-67.000.

General Foods, Limited: *See*—
Murray, E. Donald; Myers, Chester D.; and Barker, Larry D., 4,285,862, Cl. 260-123.500.

General Motors Corporation: *See*—
Blom, Hubert P., 4,285,479, Cl. 242-107.40A.
Dudynskyj, Peter P., 4,285,416, Cl. 187-9.00R.
Halsted, Edwin H., 4,285,421, Cl. 192-84.00C.

General Tire & Rubber Company, The: *See*—
Elmer, Otto C., 4,285,756, Cl. 156-334.000.
Fetchu, David C.; and Weidman, William H., 4,285,651, Cl. 425-192.00R.
Neubert, Terry C., 4,285,850, Cl. 260-29.6RB.

Genheimer, Stephen R.; Whitney, John A.; and Reinhard, Linda M., to Franklin Electric Co., Inc. Protection system for an electric motor. 4,286,303, Cl. 361-24.000.

Georg Fischer Aktiengesellschaft: *See*—
Gysel, Walter; and Trautwein, Adolf, 4,285,725, Cl. 75-128.00A.

George, David A.: *See*—
Massey, Lester G.; George, David A.; Brabets, Robert I.; and Abel, William A., 4,286,111, Cl. 174-[illegible] 0BH.

George, Kenneth L.: *See*—
Hughes, Larry M.; and George, Kenneth L., 4,285,524, Cl. 369-71.000.

Gerber, Hans, to Sandoz Ltd. Polyoxyalkyl amine-polyisocyarate reaction products as coagulation agents for binding agent dispersions. 4,285,996, Cl. 427-389.900.

Germain, Michel: *See*—
Dewulf, Roger; Denis, Jean-Luc; Germain, Michel; and Lecointre, Christian, 4,286,140, Cl. 219-306.000.

Gershberg, David N.; Lee, Alexander Y., Jr.; and Moore, William B., to E-Systems, Inc. Ranging quadrature doppler microwave intrusion alarm system. 4,286,260, Cl. 340-554.000.

Gertler, Robert. Personal hygiene apparatus. 4,285,151, Cl. 40-455.000.

Gestion Paul de Villers, Inc.: *See*—
de Villers, Paul; and Barriault, Judith, 4,285,432, Cl. 206-591.000.

Gezari, Daniel Y. Surgical ergometer table. 4,285,515, Cl. 272-73.000.

Gezari, Walter A.; and Crittenden, James. Apparatus for controlling the pressure in a tracheal cuff. 4,285,340, Cl. 128-205.240.

GHT, Gesellschaft Fur Hochtemperaturreaktor-Technik mbH: *See*—
Maus, Wolfgang; Niemeyer, Wolfgang; and Swars, Helmut, 4,285,393, Cl. 165-76.000.

Giacone, Felice, to Ing. C. Olivetti & C., S.p.A. Arrangement for driving a printing head along a printing line. 4,285,606, Cl. 400-317.100.

Gibbemeyer, Joseph F.: *See*—
Bohart, Paul R.; and Gibbemeyer, Joseph F., 4,285,658, Cl. 425-538.000.

Gilch, Heinz G.: *See*—
Piestert, Gerhardt; and Gilch, Heinz G., 4,285,755, Cl. 156-294.000.

Gillberg, James E.: *See*—
Kucharewski, Nicholas; and Gillberg, James E., 4,286,233, Cl. 331-111.000.

Gillette Company, The: *See*—
Neamtu, Nicolae, 4,285,528, Cl. 279-2.00R.

Gisler, Rudolf: *See*—
Habermeier, Jurgen; Knecht, Eduard; and Gisler, Rudolf, 4,286,097, Cl. 548-309.000.

Gitnick, Bennett J.: *See*—
Specker, Steven R.; Sawyer, Craig D.; Crowther, Russell L.; Gitnick, Bennett J.; Walters, Kenneth V.; Brown, Robert E.; and Fennern, Larry E., 4,285,769, Cl. 176-30.000.

Giuffre, Luigi; and Spaziante, Placido M., to Vertac, Inc. Isocyanate adducts with β-diketones. 4,285,876, Cl. 260-453.0SP.

Givaudan Corporation: *See*—
Huber, Ulrich, 4,285,984, Cl. 426-535.000.

Giza, Gerald J.; and Welsch, John H., to Metropolitan Wire Corporation. Coating for metal shelving and method of applying same. 4,285,783, Cl. 204-35.00N.

Glenister, Paul R., to Miles Laboratories, Inc. Production of brewer's wort. 4,285,975, Cl. 426-29.000.

Gloor, Bernhard: *See*—
Gatzi, Karl; Baumann, Hanspeter; Kunz, Walter; and Gloor, Bernhard, 4,285,959, Cl. 424-270.000.

Glory Kogyo Kabushiki Kaisha: *See*—
Abe, Masahiro, 4,285,511, Cl. 271-178.000.

Gloucester Engineering Co., Inc.: *See*—
Ambler, James R., 4,285,686, Cl. 493-439.000.

Glukhikh, Vasily A.; Sviniin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar. Device for electron irradiation of rolled materials. 4,286,166, Cl. 250-492.00B.

Glumov, Ivan F.: *See*—
Veselkov, Alex A.; Glumov, Ivan F.; Zlotnikov, Leonid A.; Maiko, Viktor P.; and Matusevich, Jury F., 4,286,270, Cl. 343-113.0DE.

Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A. Process for production of an amino acid. 4,286,060, Cl. 435-110.000.

Goddard, Bryan J.: *See*—
Beddall, Edward A.; and Goddard, Bryan J., 4,285,428, Cl. 206-354.000.

Goegelman, Robert T.: *See*—
Arison, Byron H.; Goegelman, Robert T.; and Gullo, Vincent P., 4,285,963, Cl. 424-279.000.

Goertzel, Gerald; Powell, Carl G.; and Tseng, Samuel C., to International Business Machines Corporation. Complex character generator. 4,286,329, Cl. 364-900.000.

Goidinger, Johann. Plate shaped prefabricated guilding element and a process for the production of walls by using these elements. 4,285,179, Cl. 52-309.120.

Gold, Kenneth S., to FMC Corporation. Wheel unbalance measurement system and method. 4,285,240, Cl. 73-462.000.

Goldberg, Edwin A., to RCA Corporation. Degaussing arrangement for maser surrounded by magnetic shielding. 4,286,304, Cl. 361-149.000.

Gomersall, David W., to Inland Steel Company. Process for increasing alloying rate of galvanized coating on steel. 4,285,995, Cl. 427-383.900.

Gonsalves, John A.: *See*—
Beaudette, Richard A.; and Gonsalves, John A., 4,285,572, Cl. 350-96.200.

Good, Lewis D., to Stadt, Russell E., a part interest. Rubbish and refuse incinerator. 4,285,282, Cl. 110-259.000.

Goodyear Tire & Rubber Company, The: *See*—
Parker, Dane K., 4,286,105, Cl. 564-205.000.

Gopal, Raj: *See*—
Smith, John R.; Ciaramitaro, William; and Gopal, Raj, 4,285,241, Cl. 73-572.000.

Gosswiller, Earl W., to Federal Signal Corporation. Rotating signal light with variable voltage lamp circuit. 4,286,254, Cl. 340-84.000.

Gotlib, Vitaly I.: *See*—
Grant, Zigurd A.; Grube, Maiga M.; and Gotlib, Vitaly I., 4,286,025, Cl. 428-542.000.

Goyert, Wilhelm: *See*—
Quiring, Bernd; Wenzel, Wolfgang; Niederdellmann, Georg; Wagner, Hans; and Goyert, Wilhelm, 4,286,080, Cl. 525-455.000.

Gozion, Mark; and Hale, H. Mark. Duct and flop-gate construction and method of handling dust or other particulate material. 4,285,617, Cl. 406-171.000.

Gozzo, Franco: *See*—
Galli, Remo; Gozzo, Franco; Palla, Ottorino; and Longoni, Angelo, 4,285,969, Cl. 424-304.000.

Gracheva, Irina M.: *See*—
Kaluniants, Kalust A.; Kozhemyakin, Valentin G.; Gracheva, Irina M.; and Voino, Ljudmila I., 4,286,065, Cl. 435-315.000.

Gracia, Robert F.: *See*—
Fromson, Howard A.; and Gracia, Robert F., 4,285,276, Cl. 101-451.000.

Graham, Marvin M.: *See*—
Katchka, Jay R.; and Graham, Marvin M., 4,285,662, Cl. 431-53.000.

Grahl, Paul F. Tip-up flag device for ice fishing. 4,285,154, Cl. 43-17.000.

Gram, Anker, to Cleanair Combustion Systems, Ltd. Liquefactor. 4,285,709, Cl. 62-36.000.

Grant, Zigurd A.; Grube, Maiga M.; and Gotlib, Vitaly I. Detector for thermoluminescence dosimetry. 4,286,025, Cl. 428-542.000.

Granzer, Ernold: *See*—
Kampe, Klaus-Dieter; and Granzer, Ernold, 4,285,946, Cl. 424-251.000.

Grasser, Katalin: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszelly, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Grearson, Kenneth R.; and Watson, Robert, Jr., to Multuloc Corporation. Building deck structure. 4,285,173, Cl. 52-73.000.

Green Cross Corporation, The: *See*—
Fukushima, Tunekazu; and Funakoshi, Satoshi, 4,285,933, Cl. 424-105.000.
Suyama, Tadakazu, 4,286,063, Cl. 435-215.000.

Green, Jerome J.; and Masse, Daniel J., to Raytheon Company. Compact microwave isolator. 4,286,135, Cl. 219-10.55F.

Green, John H., Sr. Anti-corrosive structure anchor assembly. 4,285,993, Cl. 427-195.000.

Green, Norman E., to Honeywell Inc. Non-symmetrical overload protection device for differential pressure transmitter. 4,285,244, Cl. 73-720.000.

Greenwald Electro-Mechanical Consultants, Inc.: *See*—
Greenwald, Harry, 4,286,132, Cl. 200-67.00D.

Greenwald, Harry, to Greenwald Electro-Mechanical Consultants, Inc. Snap-action switch. 4,286,132, Cl. 200-67.00D.

Gregorius, Klaus: *See*—
Janner, Karl; Gregorius, Klaus; and Schuster, Eberhard, 4,286,153, Cl. 250-281.000.

Griest, Edward M., to Corning Glass Works. Composite solar absorber coatings. 4,286,009, Cl. 428-212.000.

Grigorian, Shavarsh M.: *See*—
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Grimes, Patrick G.: *See*—
Bellows, Richard J.; Grimes, Patrick G.; and Elspass, Chester W., 4,285,794, Cl. 204-260.000.
Shropshire, Joseph A.; and Grimes, Patrick G., 4,286,027, Cl. 429-18.000.

Gross, Franz, to Siemens Aktiengesellschaft. Gas-tight, high-frequency permeable window arrangement in a coaxial line, particularly for traveling wave tubes. 4,286,239, Cl. 333-245.000.

Gross, Stanley S.: *See*—
Bohm, George G. A.; and Gross, Stanley S., 4,285,654, Cl. 425-327.000.

Group, Spencer M. Apparatus utilizing grooved roller for dispensing powder in predetermined quantity and configuration. 4,285,448, Cl. 222-613.000.

Grube, Maiga M.: *See*—
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Leistikow, Gerard K.; and Hales, Henry R., 4,285,156, Cl. 46-14.000.

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Hass, Jurgen: *See*—
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Coles, Ernest F., 4,285,496, Cl. 251-130.000.

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Hayashi, Masayuki: *See—*
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Haydt, Richard J., to Textron Inc. Servovalve feedback wire interface configuration. 4,285,358, Cl. 137-85.000.

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Haynes, George R., to Shell Oil Company. Inhibition of biosynthesis of triglycerides by certain N-β-phenethyl-N-pyridylalkylamines. 4,285,953, Cl. 424-263.000.

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Heatwole, Richard, to Southerland, James A., a part interest. Amusement and/or exercising device. 4,285,516, Cl. 272-146.000.

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Hedlund, Kurt: *See—*
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Hedrich, Winfried: *See—*
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Hedstrom, Norman A.; Bogren, Robert G.; and Wright, David M., to Wright Line Inc. Document holder. 4,285,555, Cl. 312-184.000.

Heeren, Richard H., to Teletype Corporation. Method of manufacturing a device in a silicon wafer. 4,285,117, Cl. 29-571.000.

Heger, Adolf: *See—*
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Heiba, El-Ahmadi I.; and Dessau, Ralph M., to Mobil Oil Corporation. Preparation of gamma-butyrolactones. 4,285,868, Cl. 260-343.600.

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Heine, Otto R.; and Riede, Peter M. Apparatus for measuring varying density of a slurry flowing in a pipeline. 4,285,239, Cl. 73-434.000.

Heise, Richard L.: *See—*
Webster, Sherwood F.; and Heise, Richard L., 4,285,320, Cl. 123-593.000.

Heiser, Joseph I.; and Erb, Edgar M., to General Battery Corporation. Snap-through anti-ignition vent cap for lead acid storage batteries. 4,286,028, Cl. 429-82.000.

Held, Kurt. Pressure cushion seal for laminating machine. 4,285,525, Cl. 277-12.000.

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Mamourian, Armand; Bousquet, Francois; and Helgorsky, Jacques, 4,285,921, Cl. 423-321.00S.

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Henrick, Clive A.: *See—*
Brown, Thomas L.; and Henrick, Clive A., 4,285,954, Cl. 424-263.000.

Herman Miller, Inc.: *See—*
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Anders, Dietmar, 4,285,652, Cl. 425-311.000.

Hermqvist, Karl G., to RCA Corporation. Method for coating a selected portion of the internal neck surface of a CRT. 4,285,990, Cl. 427-39.000.

Herr, Alfons K., to Kataflox Patentverwaltungs-Gesellschaft mbH. Method for producing a fibrous fire protection agent. 4,285,842, Cl. 252-607.000.

Herr, Charles H., Jr.; and McLees, Alan L., to Caterpillar Tractor Co. Coupling for a test stand. 4,285,213, Cl. 64-3.000.

Herrington, F. John, to Mobil Oil Corporation. Tubular extrusion apparatus. 4,285,656, Cl. 425-467.000.

Hess, Stanley R., to Cordis Corporation. Stabilized directional neural electrode lead. 4,285,347, Cl. 128-785.000.

Hesse, Heinz: *See—*
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Hicks, Ralph R.; and Martinez, Guadalupe J., to Vought Corporation. Door hinge having torsion bar hold-open structure. 4,285,098, Cl. 16-145.000.

Hickson, Charles H., to Borden, Inc. Wood adhesive from phenol, formaldehyde, melamine and urea. 4,285,848, Cl. 260-29.300.

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Higuchi, Takeru; and Burman, Anand C., to INTERx Research Corporation. Aldehyde adducts of triamterene. 4,285,947, Cl. 424-251.000.

Hiller, Heinrich: *See—*
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Hillman, Ernest C. Apparatus for raising and lowering the mattress of a crib. 4,285,079, Cl. 5-84.000.

Hilton, William J., to Bonas Brothers Limited. Horticultural enclosures. 4,285,162, Cl. 47-29.000.

Himel, Chester M.; and Cardarelli, Nathan F., to Environmental Chemicals, Inc. In-flight encapsulation of particles. 4,286,020, Cl. 428-407.000.

Himics, Richard J.; Kaplan, Michael; and Desai, Nitin V., to RCA Corporation. Method of exposing and developing a homopolymer resist. 4,286,050, Cl. 430-296.000.

Hino, Masamichi; and Itani, Seiishi, to Kubota Ltd. Electronic weighing apparatus. 4,285,411, Cl. 177-25.000.

Hinton, Kevin; and Barnes, Martin S., to Schlegel (UK) Ltd. Waterstops. 4,285,180, Cl. 52-396.000.

Hirabayashi, Kenji: *See—*
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Hirai, Minoru: *See—*
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Hirako, Susumu: *See—*
Kobayashi, Yoshimichi; Tsuge, Yukio; Hirako, Susumu; and Kiniwa, Hideaki, 4,285,789, Cl. 204-181.00C.

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Hirschmann, Wilhelm: *See—*
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Hisaka Works, Limited: *See—*
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Hislop, Alfred R., to United States of America, Navy. Waveguide structure for selectively coupling multiple frequency oscillators to an output port. 4,286,229, Cl. 331-49.000.

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Hittner, Mary A.: *See—*
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Kampe, Klaus-Dieter; and Granzer, Ernold, 4,285,946, Cl. 424-251.000.

Hoefle, Milton L., to Warner-Lambert Company. 2,2-Dimethyl-5-(2,5-dimethylphenoxy)pentyl ester of 3-pyridine carboxylic acid and use as an anti-atherosclerotic agent. 4,285,951, Cl. 424-263.000.

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Hoffman, Robert J.: *See—*
Bean, Samuel L.; Seeling, Philip F.; Hoffman, Robert J.; and Low, William W., 4,285,923, Cl. 423-385.000.

Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., to International Business Machines Corporation. Task handling apparatus. 4,286,322, Cl. 364-200.000.

Hoffman, Simon J. Holder for saber saw blade. 4,285,129, Cl. 30-392.000.

Hoffmann-La Roche Inc.: *See—*
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,285,873, Cl. 260-348.450.
Furst, Andor; Keller, Peter; and Muller, Marcel, 4,285,880, Cl. 260-455.00R.

Hoffmuller, Wilhelm: *See—*
Rossman, Axel; Hoffmuller, Wilhelm; and Kruger, Wolfgang, 4,285,634, Cl. 416-97.00A.

Hofmann, Karl: *See—*
Eblen, Ewald; Hofmann, Karl; and Kopse, Odon, 4,285,471, Cl. 239-533.400.

Hohne, Hans-Jurgen: *See—*
Mista, Kresimir; and Hohne, Hans-Jurgen, 4,285,217, Cl. 66-205.000.

Holland, Arvin E.; Wright, Douglas C.; Baker, John R.; and Curington, Alfred R., to Baker International Corporation. Apparatus for setting and orienting a whipstock in a well conduit. 4,285,399, Cl. 166-113.000.

Hollandsche Beton Groep N.V.: *See—*
Romijn, Anthony H., 4,285,237, Cl. 73-300.000.

Holzkampfer, Gunter; and Eilers, Hans-Reiner. Self-supporting staircase with center post consisting of individual structural elements. 4,285,178, Cl. 52-187.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Akiya, Kiyoshi, 4,285,887, Cl. 261-34.00A.

Honeywell Inc.: *See—*
Denny, Richard W., 4,286,234, Cl. 331-113.00R.
Green, Norman E., 4,285,244, Cl. 73-720.000.
Jurisson, Jaan; and Khalafalla, Aida S., 4,286,286, Cl. 358-92.000.
Lorenze, Robert V., Jr.; and White, William J., 4,286,278, Cl. 357-30.000.
Shiga, Tatsuhide; Tsuruoka, Yoshihiro; and Suzuki, Motoo, 4,285,779, Cl. 204-9.000.

Honjo, Seiichiro; Ijichi, Masaaki; Masunaga, Hiroaki; and Hara, Keiji, to Nippon Sheet Glass Co., Ltd. Method of quenching glass sheets. 4,285,716, Cl. 65-114.000.

Honshu Seishi Kabushiki Kaisha: *See—*
Nakamura, Masato; Nishimatsu, Saburo; Itoh, Toshitake; and Moronuki, Katsumi, 4,286,017, Cl. 428-328.000.

Honsinger, Vernon B.; and Tompkins, Russell E., to General Electric Company. Amorphous metal hysteresis motor. 4,286,188, Cl. 310-162.000.

Hoogendoorn, Abraham: *See—*
Immink, Kornelis A.; and Hoogendoorn, Abraham, 4,286,318, Cl. 364-118.000.

Hooker Chemicals & Plastics Corp.: *See—*
Cook, Edward H., Jr., 4,285,795, Cl. 204-266.000.

Hoover, Calvin E. Ornament mounting bracket for macrame designs. 4,285,608, Cl. 403-002.000.

Hoover Universal, Inc.: *See—*
Hancock, William L., 4,285,488, Cl. 248-405.000.
Kitchen, John P.; and Riddle, Neville L., 4,285,080, Cl. 5-186.00R.

Hoppe, Hans-Joachim; and Ostertag, Karl, to Akzona Incorporated. Process for the manufacture of monofilaments. 4,285,898, Cl. 264-176.00F.

Horiguchi, Akira: *See—*
Masutani, Kenzo; Horiguchi, Akira; and Sumitomo, Hiroyuki, 4,285,395, Cl. 165-110.000.

Horike, Masanori, to Ricoh Company, Ltd. Deflection compensated ink ejected printing apparatus. 4,286,273, Cl. 346-75.000.

Horning, Donald E.: *See—*
Garrett, Robert W., Sr.; Horning, Donald E.; and Merkel, Dennis L., 4,285,433, Cl. 209-573.000.

Hornle, Reinhold: *See—*
Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Orttmann, Harry, 4,285,692, Cl. 8-499.000.

Horton, Jack F. Thermal energy storage apparatus. 4,285,389, Cl. 165-1.000.

Horton, Robert J., to Rexnord Inc. Truck mixer washout reclaim system. 4,285,808, Cl. 209-17.000.

Horton, Thomas. Concrete mixing apparatus. 4,285,598, Cl. 366-15.000.

Hosaka, Toshihiko: *See—*
Tsuboi, Hiroaki; and Hosaka, Toshihiko, 4,286,147, Cl. 250-201.000.

Houdaille Industries, Inc.: *See—*
Jelinek, Ross R.; Carbone, Victor T.; and Brown, Paul R., 4,285,259, Cl. 83-552.000.

Houdard, Jean P., to Le Materiel Telephonique. Digital devices for spectrum analysis. 4,286,326, Cl. 364-485.000.

Houtman, Paul K.: *See—*
Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., 4,285,639, Cl. 417-218.000.

Howell, Robert G., to TRW, Inc. Vitreous enamel resistor and method of making the same. 4,286,251, Cl. 338-309.000.

Hozumi, Kazuo, to Kabushiki Kaisha Morita Seisakusho. Film cassette drive mechanism in dental radiographic apparatus for photographing entire jaws. 4,286,161, Cl. 250-439.00P.

Hozumi, Shiro: *See—*
Takeshita, Isao; Hozumi, Shiro; and Wakamatsu, Nobuhiko, 4,285,208, Cl. 62-141.000.

HPM Corporation: *See—*
Kruder, George A., 4,285,600, Cl. 366-89.000.

Hubbard, James H.: *See—*
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,285,591, Cl. 355-14.00C.

Huber, Ulrich, to Givaudan Corporation. Flavoring with dialkylaminoalkylene mercaptans and sulfides. 4,285,984, Cl. 426-535.000.

Hufford, Jack E.; and Mosmeier, William E. Solar grain drying/storage building. 4,285,143, Cl. 34-93.000.

Hugemann, Bernhard; and von Sengbusch, Guenter, to Battelle Institut e.V. Pipette system for the volumetric extraction and linear deposition of a suspended material. 4,285,907, Cl. 422-100.000.

Hughes Aircraft Company: *See—*
Myer, Jon H., 4,285,760, Cl. 156-617.00H.
Parsons, J. Howard, 4,285,889, Cl. 264-2.600.

Hughes, Alfred J.: *See—*
Booker, Hazael E.; Davies, Barrie L.; Hughes, Alfred J.; and Shimalla, Charles J., 4,285,748, Cl. 156-167.000.

Hughes, Larry M.; and George, Kenneth L., to RCA Corporation. Stylus cleaning apparatus for video disc player. 4,285,524, Cl. 369-71.000.

Hughes, Lisa A.: *See—*
Kubela, Rudolf; Edwards, Philip D.; and Hughes, Lisa A., 4,286,095, Cl. 546-213.000.

Hummes, Ferdinand: *See—*
Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Orttmann, Harry, 4,285,692, Cl. 8-499.000.

Hund, Franz; and Kresse, Peter, to Bayer Aktiengesellschaft. Active anti-corrosion pigments based on calcium oxide, aluminium oxide and iron oxide. 4,285,726, Cl. 106-14.050.

Hundertmark, James M.; and Wagner, James L., to Brunswick Corporation. Cold start fuel enrichment system. 4,285,308, Cl. 123-187.50R.

Hundrieser, Dieter H.: *See—*
Olszewski, Edward J.; Hundrieser, Dieter H.; and Ostapovitch, Harold J., 4,286,121, Cl. 179-98.000.

Huston, Charles W. Trig pole for masonry construction. 4,285,139, Cl. 33-407.000.

Hutson, Jearld L. Multilayer semiconductor switching devices. 4,286,279, Cl. 357-39.000.

Huxley, Edward E.: *See—*
Nash, Martin E.; and Huxley, Edward E., 4,286,099, Cl. 549-87.000.

Hydraulic Servocontrols Corporation: *See—*
Kolm, Harvard B., 4,285,363, Cl. 137-596.170.

Hyman, Sy. Article for the dispensing of volatiles. 4,285,468, Cl. 239-55.000.

Iacobucci, Guillermo A.; and Sweeny, James G., to Coca-Cola Company, The. Process for enhancing the sunlight stability of anthocyanic pigments. 4,285,982, Cl. 426-250.000.

Iacobucci, Guillermo A.; and Sweeny, James G., to Coca-Cola Company, The. Process for enhancing the sunlight stability of rubrolone. 4,285,985, Cl. 426-540.000.

Ichino, Kazuo: *See—*
Okubo, Tsuneo; Hamamoto, Nobuo; and Ichino, Kazuo, 4,286,154, Cl. 250-307.000.

Iding, Wilhelmus H., to U.S. Philips Corporation. Acoustic electrical conversion device with at least one capacitor electret element connected to an electronic circuit. 4,286,122, Cl. 179-111.00E.

Ignatjev, Vladimir. Air ion and charge detector. 4,286,210, Cl. 324-72.500.

Ii, Yoshiro: *See—*
Yoshida, Koichi; Hayano, Fusakazu; and Ii, Yoshiro, 4,286,015, Cl. 428-305.000.

Iio, Toshimitsu, to Yamaha Hatsudoki Kabushiki Kaisha. Two stroke engine having exhaust port timing control valve. 4,285,311, Cl. 123-323.000.

Iizuka, Takehiko; and Ui, Kunio, to Kabushiki Kaisha Komatsu Seisakusho. Control lever for a transmission. 4,285,250, Cl. 74-473.00P.
Ijichi, Masaaki: *See*—
Honjo, Seiichiro; Ijichi, Masaaki; Masunaga, Hiroaki; and Hara, Keiji, 4,285,716, Cl. 65-114.000.
Ikeda, Sadahiro: *See*—
Uno, Takeshi; Ueda, Hirotada; Ikeda, Sadahiro; Ejiri, Masakazu; and Matsuoka, Shinji, 4,286,146, Cl. 235-456.000.
Ikeda, Tadashi: *See*—
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.
Ikeda, Tomoaki: *See*—
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,286,045, Cl. 430-270.000.
Ikuta, Hironori: *See*—
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,285,940, Cl. 424-246.000.
Illgen, Fritz: *See*—
Olivenbaum, James E.; and Illgen, Fritz, 4,286,241, Cl. 335-151.000.
Illing, Henry; and Newkirk, Chauncey, to Kieley & Mueller, Inc. Stud block for an eccentric rotary valve. 4,285,500, Cl. 251-367.000.
Imai, Eiji: *See*—
Harada, Hideo; and Imai, Eiji, 4,285,540, Cl. 296-192.000.
Imamura, Saburo; Sugawara, Shungo; and Sato, Hirotsugu, to Nippon Telegraph and Telephone Public Corporation. Method of forming a negative resist pattern. 4,286,049, Cl. 430-296.000.
Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Image display device. 4,285,575, Cl. 350-357.000.
Immink, Kornelis A.; and Hoogendoorn, Abraham, to U.S. Philips Corporation. Control loop. 4,286,318, Cl. 364-118.000.
Imperial Chemical Industries Limited: *See*—
Cartwright, David; and Collins, David J., 4,285,723, Cl. 71-103.000.
Crosby, John; and Terry, Bernard W. H., 4,285,778, Cl. 203-48.000.
Nightingale, Douglas D. J., 4,285,498, Cl. 251-214.000.
Worthington, Paul A.; and Parry, Keith P., 4,285,722, Cl. 71-92.000.
Ina, Toshikazu; Kawai, Hisasi; and Matsui, Takeshi, to Nippon Soken, Inc. Apparatus for controlling an ignition coil of an internal combustion engine. 4,285,322, Cl. 123-630.000.
Inamoto, Hiroshi, to Kato Hatsujo Kaisha, Ltd.; and Nissan Motor Co., Ltd. Element mounting structure. 4,285,103, Cl. 411-508.000.
Indesit Industria Elettrodomestici Italiana S.p.A.: *See*—
Marino, Francesco, 4,286,292, Cl. 358-190.000.
Industrial Design and Engineering: *See*—
Stone, Richard W., 4,285,573, Cl. 350-99.000.
Industrie Pirelli, S.p.A: *See*—
Manini, Silvio; and Pacciarini, Antonio, 4,285,630, Cl. 414-786.000.
Industries et Techniques d'Ameublement: *See*—
Contastin, Andre, 4,285,893, Cl. 264-54.000.
Infodetics Corporation: *See*—
Stephens, Edwin V., 4,285,623, Cl. 414-278.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Bernardis, Francesco; Adamoli, Contardo; and Cretaz, Franco, 4,285,603, Cl. 400-124.000.
Giacone, Felice, 4,285,606, Cl. 400-317.100.
Ingram, Maxwell. Prime mover fuel efficiency control system. 4,286,324, Cl. 364-442.000.
Inkomag: *See*—
Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, 4,285,821, Cl. 210-777.000.
Inland Steel Company: *See*—
Gomersall, David W., 4,285,995, Cl. 427-383.900.
Inman, Billy E., to Spencer Wright Industries, Inc. Apparatus for shifting tufting machine needle bar. 4,285,287, Cl. 112-79.00R.
Inman, Billy E.; and Phillips, Wheeler E., to Spencer Wright Industries, Inc. Tufting apparatus for preventing sew-thru and tagging. 4,285,288, Cl. 112-79.00R.
Innocenti Santeustacchio S.p.A.: *See*—
Gancia, Emanuele, 4,285,226, Cl. 72-208.000.
Inoue, Kazuhiro; and Matsui, Fumio, to Nippon Oil and Fats Co., Ltd. Granular propellant and a method of producing the same. 4,285,743, Cl. 149-2.000.
Inoue, Noriyuki: *See*—
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.
Inspiration Consolidated Copper Company: *See*—
Colvin, Beal H., 4,285,504, Cl. 266-266.000.
Institut Francais du Petrole: *See*—
Douaud, Andre; and Rialan, Joseph, 4,285,315, Cl. 123-425.000.
Jacquin, Yves; Davidson, Michel; and Le Page, Jean-Francois, 4,285,804, Cl. 208-48.00R.
Intengan, Franklin F., to American Hospital Supply Corporation. Decanting centrifuge. 4,285,463, Cl. 233-26.000.
Interdri Limited: *See*—
Wedgwood, Sidney, 4,285,141, Cl. 34-21.000.
Interfiltre S.A.: *See*—
Colomer, Pierre, 4,285,353, Cl. 134-181.000.
Intermountain Research and Development Corp.: *See*—
Saldick, Jerome; and Cohen, Bernard, 4,285,915, Cl. 423-206.00T.
International Business Machines Corporation: *See*—
Baker, David C.; Bantz, David F.; and Evangelisti, Carlo J., 4,286,321, Cl. 364-200.000.
Botte, Anthony J.; Hubbard, James H.; and Spivey, Paul R., 4,285,591, Cl. 355-14.00C.
Clancy, Douglas E.; Frankeny, Richard F.; and Olson, George P., 4,286,202, Cl. 318-696.000.
Cunningham, Earl A., 4,286,296, Cl. 360-77.000.
Fatula, Joseph J., Jr.; and Roberts, Stanley, 4,285,761, Cl. 156-628.000.
Goertzel, Gerald; Powell, Carl G.; and Tseng, Samuel C., 4,286,329, Cl. 364-900.000.
Guzman, Adolfo M.; and Van Winkle, Howard E., 4,286,181, Cl. 310-49.00R.
Heiblum, Mordehai, 4,286,275, Cl. 357-12.000.
Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., 4,286,322, Cl. 364-200.000.
Konian, Richard R.; and Walsh, James L., 4,286,179, Cl. 307-455.000.
Langdon, Glen G., Jr.; and Rissanen, Jorma J., 4,286,256, Cl. 340-347.0DD.
Lloyd, Edward R.; and Marowski, Raymond M., 4,285,605, Cl. 400-310.000.
Rex, Donald K., 4,285,604, Cl. 400-247.000.
Rinkleib, Helfried O., 4,286,298, Cl. 360-109.000.
Root, Ronald R.; Warner, Michael W.; and Watrous, Robert B., 4,286,297, Cl. 360-103.000.
Shlatz, Myron F., 4,285,512, Cl. 271-233.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.
International Standard Electric Corporation: *See*—
Blomley, Peter F., 4,286,123, Cl. 179-170.00T.
De Brouckere, Lucien C., 4,285,911, Cl. 422-249.000.
Fischer, Axel, 4,286,236, Cl. 332-10.000.
INTERx Research Corporation: *See*—
Higuchi, Takeru; and Burman, Anand C., 4,285,947, Cl. 424-251.000.
Iowa State University Research Foundation, Inc.: *See*—
Vander Molen, Gary L.; and Brown, Timothy A., 4,285,445, Cl. 222-49.000.
Ipolyi, George. Device for erasing visible recorded signals from a recording medium having oriented magnetic components. 4,286,295, Cl. 360-66.000.
Irie, Yoshio: *See*—
Tsubakimoto, Tsuneo; Shimomura, Tadao; Irie, Yoshio; and Masuda, Yoshihiko, 4,286,082, Cl. 526-240.000.
Irwin, Lawrence F. Hydraulically actuated apparatus. 4,285,126, Cl. 30-180.000.
Isaacson, Joel D. Autonomic string-manipulation system. 4,286,330, Cl. 364-900.000.
Isenberg, Arnold O., to Westinghouse Electric Corp. Sensor for oxygen-combustibles gas mixtures. 4,285,790, Cl. 204-195.00R.
Ishida, Kinji, to Yoshida Kogyo K. K. Dual window assembly. 4,285,166, Cl. 49-63.000.
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, to Babcock-Hitachi Kabushiki Kaisha. Method of producing plate-shaped catalyst unit for NOx reduction of exhaust gas. 4,285,838, Cl. 252-469.000.
Ishihara, Shunichi: *See*—
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,286,032, Cl. 430-55.000.
Ishii, Tadashi. Motor actuated bell. 4,286,258, Cl. 340-396.000.
Ishii, Tadashi, to Kobishi Electric Co., Ltd. Electrically operated bell. 4,286,259, Cl. 340-396.000.
Ishikawa, Hiroaki: *See*—
Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, 4,286,211, Cl. 324-117.00R.
Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, to Konishiroku Photo Industry Co., Ltd. Process for forming dye images. 4,286,053, Cl. 430-389.000.
Ishimaru, Kenzo; and Sharples, Thomas D., to Beckman Instruments, Inc. Method and apparatus for sealing centrifuge tubes. 4,285,904, Cl. 264-322.000.
Isobe, Yukihiro; Hayama, Masashi; and Hirabayashi, Kenji, to TDK Electronics Co., Ltd. Method of producing magnetic coating material for magnetic recording media. 4,285,825, Cl. 252-62.540.
Isoldi, Mario: *See*—
Richardson, William C.; and Isoldi, Mario, 4,285,150, Cl. 40-312.000.
Istituto Biologico Chemioterapico "ABC" S.p.A.: *See*—
Franzone, Jose S., 4,285,962, Cl. 424-274.000.
Itani, Seiishi: *See*—
Hino, Masamichi; and Itani, Seiishi, 4,285,411, Cl. 177-25.000.
Itano, Mitsuyoshi: *See*—
Uehara, Masafumi; and Itano, Mitsuyoshi, 4,285,727, Cl. 106-22.000.
Itaoka, Toshinari: *See*—
Wada, Juro; and Itaoka, Toshinari, 4,285,928, Cl. 424-5.000.
Ito, Akira; and Arisaka, Katsuharu, to Daicel Ltd. Method and apparatus for the manufacture of cigarette filters containing particulate material. 4,285,677, Cl. 493-43.000.
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, to Canon Kabushiki Kaisha. Electrophotographic process and apparatus therefor. 4,286,032, Cl. 430-55.000.

Ito, Shimpei; Daimon, Masaru; and Kato, Tadashi, to Nittobo Itamikako Co., Ltd. Cold padding batch dyeing process for tubular knitted fabrics. 4,285,694, Cl. 8-532.000.

Itoh, Tadamasa, to Sumitomo Chemical Company, Limited. Analytical method and apparatus for the determination of total nitrogen contents in samples. 4,285,699, Cl. 23-230.0PC.

Itoh, Toshitake: *See*—
Nakamura, Masato; Nishimatsu, Saburo; Itoh, Toshitake; and Moronuki, Katsumi, 4,286,017, Cl. 428-328.000.

ITT Industries, Inc.: *See*—
Budecker, Ludwig, 4,285,198, Cl. 60-547.00A.
Ostwald, Fritz, 4,285,417, Cl. 188-73.300.

Ivanov, Vladimir A.: *See*—
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.

Iwami, Hiroyuki: *See*—
Yotsutsuji, Akira; Ueda, Seiichi; and Iwami, Hiroyuki, 4,285,901, Cl. 264-225.000.

Iwao, Soichi; Takiguchi, Shinji; and Sakata, Toshio, to Minolta Camera Kabushiki Kaisha. Fixing device for electrophotographic copying machines. 4,285,295, Cl. 118-60.000.

Izzi, Edmund F. Bread making process and product thereof particularly well suited for freezing and reheating. 4,285,979, Cl. 426-94.000.

J. I. Case Company: *See*—
Taylor, Eugene D., 4,286,139, Cl. 219-208.000.

J & J Marquardt: *See*—
Schaffeler, Alois; and Stratmann, Uwe, 4,286,125, Cl. 200-6.00B.

J. M. Voith GmbH: *See*—
Schiel, Christian, 4,285,768, Cl. 162-301.000.

Jablonowski, Donald P., to Western Electric Company, Inc. Laser scanning and multiple detection for video image processing. 4,286,293, Cl. 358-199.000.

Jackson, David H.: *See*—
Rapp, John S.; and Jackson, David H., 4,285,446, Cl. 222-70.000.

Jacobi, Haireddin: *See*—
Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, 4,285,935, Cl. 424-177.000.

Jacobson, Stephen E.: *See*—
Mares, Frank; and Jacobson, Stephen E., 4,286,068, Cl. 521-53.000.

Jacques, Joseph L., Jr.; Smith, Michael D.; and Yehl, Gregory C., to General Electric Company. Heat-up/cool-down bimetal timer for electric toaster. 4,286,246, Cl. 337-94.000.

Jacquin, Yves; Davidson, Michel; and Le Page, Jean-Francois, to Institut Francais du Petrole. Process for hydrotreating heavy hydrocarbons in liquid phase in the presence of a dispersed catalyst. 4,285,804, Cl. 208-48.00R.

Jagelid, Kjell-Inge, to Hedlund, Kurt. Machine for manufacture of spiral tubing with folded seam. 4,285,222, Cl. 72-28.000.

James, Jack E., to RCA Corporation. Wide range drift compensated FM signal generator. 4,286,237, Cl. 332-19.000.

Jankowski, Edward M., to Du-Al Manufacturing Company, Division of Core Industries, Inc. Grapple system. 4,285,628, Cl. 414-739.000.

Janner, Karl; Gregorius, Klaus; and Schuster, Eberhard, to Kraftwerk Union Aktiengesellschaft. Method and apparatus for the separation of isotope mixtures. 4,286,153, Cl. 250-281.000.

Jansen, Raymond K. Document clamping devices. 4,285,102, Cl. 24-17.00R.

Janson, Richard W. Channel strut for stage equipment support system. 4,285,095, Cl. 16-94.00R.

Jaquiss, Donald B. G.; Mark, Victor; and Mitchell, Lawrence C., to General Electric Company. Process for preparing polycarbonates using substituted pyridine catalysts. 4,286,085, Cl. 528-199.000.

Jarrett, Robert B.; and Pace, Wilson D., to Motorola, Inc. Comparator with hysteresis for interfacing with a ground-referenced A.C. sensor. 4,286,176, Cl. 307-261.000.

Jassal, Avtar S., to Stauffer Chemical Company. Solvent extraction process for preparing purified phosphoric acid and sodium phosphate salts. 4,285,920, Cl. 423-305.000.

Jelinek, Ross R.; Carbone, Victor T.; and Brown, Paul R., to Houdaille Industries, Inc. Turret index system. 4,285,259, Cl. 83-552.000.

Jennie, Fred L. Trajectory compensating device. 4,285,137, Cl. 33-246.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See*—
Pugh, Ralph A.; and Ford, Kenneth L., 4,286,152, Cl. 250-281.000.

Jocteur, Robert, to Societe Industrielle de Liaisons Electriques Silec. Apparatus for extruding a cross-linked material. 4,285,648, Cl. 425-97.000.

Joel, Lewis G., III. Simulated athletic game. 4,285,521, Cl. 273-247.000.

Johansson, B. Lennart: *See*—
Klinteberg, G. Rune; Johansson, N. A. Bertil; Johansson, B. Lennart; and Dahlgren, Christer H., 4,285,526, Cl. 277-153.000.

Johansson, N. A. Bertil: *See*—
Klinteberg, G. Rune; Johansson, N. A. Bertil; Johansson, B. Lennart; and Dahlgren, Christer H., 4,285,526, Cl. 277-153.000.

Johansson, Rolf A. G., to Jonsereds Aktiebolag. Housing for an internal combustion engine. 4,285,309, Cl. 123-195.00C.

Johns-Manville Corporation: *See*—
Wilkuski, James E., 4,285,713, Cl. 65-27.000.

Johnson, Betty S.: *See*—
Pera, John D.; and Johnson, Betty S., 4,285,765, Cl. 162-161.000.

Johnson, Bill E.: *See*—
Dannenmann, John E., Jr.; and Johnson, Bill E., 4,286,114, Cl. 179-1.0CN.

Johnson Electric Coil Company: *See*—
King, Ralph W., Jr.; and Hjermstad, Hans U., 4,286,193, Cl. 315-175.000.

Johnson, Frederick O., to Westinghouse Electric Corp. Converter apparatus. 4,286,315, Cl. 363-87.000.

Johnson & Johnson Baby Products Company: *See*—
Mesek, Frederick K., 4,285,342, Cl. 128-287.000.
Rega, John F., 4,285,747, Cl. 156-164.000.

Johnson, Matthey & Co., Limited: *See*—
Enga, Bernard E., 4,285,665, Cl. 431-328.000.
Pearce, Roy W. J.; Carbert, John; and MacDonald, John P. K., 4,285,994, Cl. 427-222.000.

Johnson, Michael R.; and Melvin, Lawrence S., Jr., to Pfizer Inc. Pharmacologically active 4-[2-hydroxy-4-(substituted)phenyl]naphthalen-2(1H)-ones and 2-ols, derivatives thereof and intermediates therefor. 4,285,867, Cl. 260-338.000.

Johnson, Russell W.: *See*—
Braun, Richard; Johnson, Russell W.; and Gatsis, John G., 4,285,803, Cl. 208-48.0AA.

Johnson, Thomas M.: *See*—
McMahon, William H.; Fraula, Louis F.; Athey, Stuart E.; Johnson, Thomas M.; and Moore, Terrence W., 4,285,352, Cl. 134-48.000.

Jones, Carmen B., to United States of America, Air Force. Broad spectrum vibration damper assembly fixed stator vanes of axial flow compressor. 4,285,633, Cl. 415-191.000.

Jones, Donald E.; Parker, DeRay; and Boren, Paul R., to United States of America, Energy. Dosimeter for measuring skin dose and more deeply penetrating radiation. 4,286,165, Cl. 250-484.000.

Jones, Edward: *See*—
Waldrop, Forrest B.; and Jones, Edward, 4,285,782, Cl. 204-32.00R.

Jones, Gerald M.: *See*—
Basily, Basily B.; Sansome, Dennis H.; and Jones, Gerald M., 4,285,234, Cl. 73-862.650.

Jones, Richard A., to Fischer & Porter Co. Pneumatic relay. 4,285,357, Cl. 137-85.000.

Jones, Robert E.: *See*—
Daroga, Minoo J.; and Jones, Robert E., 4,286,013, Cl. 428-266.000.

Jongsma, Cornelis, to Stamicarbon, B.V. Process for the purification of benzaldehyde. 4,285,777, Cl. 203-32.000.

Jonsereds Aktiebolag: *See*—
Johansson, Rolf A. G., 4,285,309, Cl. 123-195.00C.

Jonte, Patrick B.; and Biener, John K. Protection system for part molding machines. 4,285,649, Cl. 425-137.000.

Jorges, Shirley M.: *See*—
Hash, Juel T., 4,285,286, Cl. 112-79.00R.

Jory, Howard R.: *See*—
Shively, James F.; Evans, Steven J.; Jory, Howard R.; and Mizuhara, Yosuke M., 4,286,240, Cl. 333-252.000.

Judson, J. Bruce. T-Bar ratcheting screwdriver. 4,285,375, Cl. 145-77.000.

Jundt, Werner: *See*—
Kiencke, Uwe; Jundt, Werner; and Seeger, Karl, 4,285,314, Cl. 123-422.000.

Jurisson, Jaan; and Khalafalla, Aida S., to Honeywell Inc. Photo controlled stereoscopic television system. 4,286,286, Cl. 358-92.000.

Jurkowski, Walter J., to Pitney Bowes Inc. Cleaning device for cold pressure fusing roller. 4,285,090, Cl. 15-256.510.

Kabbe, Hans-Joachim; Frohberger, Paul-Ernst; and Roessler, Peter, to Bayer Aktiengesellschaft. Combating pests with 2-carboxymethyl-3-carboxy-chromones and esters. 4,285,965, Cl. 424-283.000.

Kabushiki Kaisha I.T.L.: *See*—
Kume, Takeshi, 4,285,249, Cl. 74-89.150.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Iizuka, Takehiko; and Ui, Kunio, 4,285,250, Cl. 74-473.00P.

Kabushiki Kaisha Morita Seisakusho: *See*—
Hozumi, Kazuo, 4,286,161, Cl. 250-439.00P.
Suzuki, Masakazu, 4,286,162, Cl. 250-439.00P.
Suzuki, Masakazu, 4,286,163, Cl. 250-439.00P.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,285,275, Cl. 101-407.0BP.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Mukai, Takamitu, 4,285,640, Cl. 417-269.000.

Kageyama, Kunio; and Hayashi, Tetsuo, to Yokohama Rubber Co., Ltd., The. Elastomer tire filling material. 4,285,854, Cl. 260-37.00N.

Kajita, Tomomasa. Magnetically operable lock. 4,285,220, Cl. 70-276.000.

Kalaus, Gyorgy: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,865, Cl. 260-239.30P.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,950, Cl. 424-256.000.

Kaliev, Dostan: *See*—
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Kalsec, Inc.: *See*—
Todd, Paul H., Jr.; and Haley, Howard E., 4,285,981, Cl. 426-250.000.

Kaltenbach, Kenneth F., to Singer Company, The. Modular work trimmer for a sewing machine. 4,285,290, Cl. 112-125.000.

Kaluniants, Kalust A.; Kozhemyakin, Valentin G.; Gracheva, Irina M.; and Voino, Ljudmila I. Apparatus for cultivation of microorganisms on granular nutrient medium. 4,286,065, Cl. 435-315.000.

Kalvoda, Jaroslav, to Ciba-Geigy Corporation. Novel androstadiene-17-carboxylic acid esters. 4,285,937, Cl. 424-243.000.

Kamensky, Sergei N.: *See*—
Zuzanov, Georgy I.; Mironkin, Iosif S.; Tsarik, Jury N.; Alexandrova, Natalia A.; Kamensky, Sergei N.; and Nevedomsky, Evgeny N., 4,285,704, Cl. 55-274.000.

Kamio, Hiroyuki: *See*—
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,285,838, Cl. 252-469.000.

Kampe, Klaus-Dieter; and Granzer, Ernold, to Hoechst Aktiengesellschaft. 4-Amino-2-ureido (or -thioureido)-pyrimidine-5-carboxylic acid anilides. 4,285,946, Cl. 424-251.000.

Kamps, Hubertus E. L.; and Wulms, Christiaan J. G. H., to U.S. Philips Corporation. Image intensifier tube with photocathode protective circuit. 4,286,148, Cl. 250-213.0VT.

Kanai, Takeo: *See*—
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Kane, Michael P.; and Szmuszkovicz, Jacob, to Upjohn Company, The. N-[ω-(Dimethylamino)alkyl]-3',4'-dichloropropionanilides. 4,286,106, Cl. 564-220.000.

Kane, Thomas J.: *See*—
Buckner, Carrol E.; Cook, C. Glenn; and Kane, Thomas J., 4,285,327, Cl. 126-143.000.

Kaneko, Tamaki, to Ricoh Co., Ltd. Collator. 4,285,508, Cl. 271-4.000.

Kankaanpaa, Matti, to Valmet OY. Press method in a paper machine. 4,285,766, Cl. 162-199.000.

Kanno, Tadaaki; and Koike, Tadao, to Ricoh Co. Ltd. Sheet feeding cassette for copying apparatus capable of receiving manually inserted sheets. 4,285,510, Cl. 271-127.000.

Kanzaki, Toshihide: *See*—
Hara, Haruichi; Kanzaki, Toshihide; Motomuro, Hisanao; and Adachi, Akiyoshi, 4,285,927, Cl. 423-535.000.

Kaplan, Michael: *See*—
Himics, Richard J.; Kaplan, Michael; and Desai, Nitin V., 4,286,050, Cl. 430-296.000.

Karayianis, Nick: *See*—
Morrison, Clyde A.; Wortman, Donald E.; Leavitt, Richard P.; and Karayianis, Nick, 4,286,230, Cl. 331-79.000.

Karkhanis, Yashwant D.: *See*—
Limjuco, Guadalupe A.; Karkhanis, Yashwant D.; and Carlo, Dennis J., 4,285,931, Cl. 424-92.000.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Mista, Kresimir; and Hohne, Hans-Jurgen, 4,285,217, Cl. 66-205.000.

Kasai, Masanao: *See*—
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,286,032, Cl. 430-55.000.

Kataflox Patentverwaltungs-Gesellschaft mbH: *See*—
Herr, Alfons K., 4,285,842, Cl. 252-607.000.

Katayama, Toshiyuki; Agura, Kiyokazu; and Matsuda, Masayuki, to Nichirin Rubber Industrial Co., Ltd. Pulsation-absorbing flexible pipe for pressure fluid device. 4,285,534, Cl. 285-119.000.

Katchka, Jay R.; and Graham, Marvin M., to Robertshaw Controls Company. Gas burner control mechanism. 4,285,662, Cl. 431-53.000.

Kato Hatsujo Kaisha, Ltd.: *See*—
Inamoto, Hiroshi, 4,285,103, Cl. 411-508.000.

Kato, Katsunori: *See*—
Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, 4,286,053, Cl. 430-389.000.

Kato, Masayasu: *See*—
Tsushima, Susumu; Matsumoto, Norichika; and Kato, Masayasu, 4,286,088, Cl. 544-16.000.

Kato, Tadashi: *See*—
Ito, Shimpei; Daimon, Masaru; and Kato, Tadashi, 4,285,694, Cl. 8-532.000.

Kato, Yoshiaki: *See*—
Takahashi, Koichi; and Kato, Yoshiaki, 4,285,089, Cl. 15-250.020.

Kato, Yoshio; Seki, Kazuichi; and Shimizu, Yoshio, to Gakko Hojin Takai University. Vertical axis type wind powerturbine. 4,285,636, Cl. 416-197.00A.

Katoh, Kazunobu: *See*—
Sakai, Nobuo; Hayashi, Hiroshi; Toriuchi, Masaharu; and Katoh, Kazunobu, 4,286,042, Cl. 430-216.000.

Katsu, Kanemasa: *See*—
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Katsuuma, Kunio, to Toshin Kogyo Co., Ltd. Seamless cylindrical printing screen and process for preparation thereof. 4,285,274, Cl. 101-128.210.

Kauffman, Samuel L.; and Morin, John O., to Burroughs Corporation. Bar graph display panel and system for displaying analog values therein. 4,286,265, Cl. 340-754.000.

Kaufman, Vernon R.; and Nelson, Eugene L., to Tecumseh Products Company. Keyed adapter sleeve. 4,285,305, Cl. 123-146.50A.

Kautzer, Ronald E.; and Mueller, Donald M., to D. Mueller Welding, Inc. Method of hydrodynamic forming. 4,285,109, Cl. 29-157.00R.

Kawai, Hisasi: *See*—
Ina, Toshikazu; Kawai, Hisasi; and Matsui, Takeshi, 4,285,322, Cl. 123-630.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Suzuki, Takeshi; Hatamori, Takashi; Murao, Mikio; Nezuka, Minoru; Kumagai, Chikanori; and Takagishi, Masaharu, 4,285,142, Cl. 34-57.00E.

Kawasaki, Masahiro; and Urata, Sinji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera controller for flashgun operation. 4,285,586, Cl. 354-34.000.

Kawasaki, Masami; Ohtori, Toschimi; Sukigara, Kunisuke; and Satoh, Mitsuo, to Kubota Ltd. Mulcher. 4,285,161, Cl. 47-9.000.

Kazaoka, Kenichi; and Hayashi, Masayuki, to Aisin Seiki Kabushiki Kaisha. Assembly for locking and unlocking an automobile seat in selected vertical positions. 4,285,487, Cl. 248-396.000.

Kefalas A/S: *See*—
Lassen, Niels; Boges, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., 4,285,956, Cl. 424-267.000.

Keller, Peter: *See*—
Furst, Andor; Keller, Peter; and Muller, Marcel, 4,285,880, Cl. 260-455.00R.

Kelly, Thomas J. Boiler blowdown system. 4,285,302, Cl. 122-382.000.

Kempke, William G.: *See*—
Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., 4,286,322, Cl. 364-200.000.

Kennedy, Alvin B., Jr. Chemical reactor, flow distributor, system and method. 4,285,910, Cl. 422-219.000.

Kennedy, Lyn R., to Precision Machine Products, Inc. Method and apparatus for measuring and controlling volumetric flow rate of gases in a line. 4,285,245, Cl. 73-861.000.

Keplinger, Klaus: *See*—
Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, 4,285,821, Cl. 210-777.000.

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Muller, Burkhardt, 4,285,830, Cl. 252-301.10W.

Keunecke, Gerhard; Klopfer, Anton; and Sterck, Lothar, to Davy International Aktiengesellschaft. Process for continuously separating phthalic anhydride from the reaction gases of the catalytic oxidation of o-xylene and/or naphthalene. 4,285,870, Cl. 260-346.700.

Keunecke, Gerhard; Klopfer, Anton; and Sterck, Lothar, to Davy International Aktiengesellschaft. Process for continuously separating phthalic anhydride from the reaction gases of the catalytic oxidation of o-xylene and/or naphthalene. 4,285,871, Cl. 260-346.700.

Keve, Tibor: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,865, Cl. 260-239.30P.
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Khalafalla, Aida S.: *See*—
Jurisson, Jaan; and Khalafalla, Aida S., 4,286,286, Cl. 358-92.000.

Kieber, Lothar, to Deutsche Calypsolgesellschaft mbH & Co. Method and device for the refilling of double chamber presspack spray containers. 4,285,372, Cl. 141-2.000.

Kieley & Mueller, Inc.: *See*—
Illing, Henry; and Newkirk, Chauncey, 4,285,500, Cl. 251-367.000.

Kiely, Denis M. Multi-function variable speed drive. 4,285,675, Cl. 474-19.000.

Kiencke, Uwe; Jundt, Werner; and Seeger, Karl, to Robert Bosch GmbH. System to decrease operating jolts in a vehicle by controlling fuel and ignition timing of an internal combustion engine therein. 4,285,314, Cl. 123-422.000.

Kierstead, Richard W.: *See*—
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,285,873, Cl. 260-348.450.

Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., to Olin Corporation. Transformer-driven shield for electromagnetic casting. 4,285,387, Cl. 164-603.000.

King, John M.: *See*—
deVries, Louis; and King, John M., 4,285,822, Cl. 252-46.400.

King, Ottis W. Safety valve. 4,285,495, Cl. 251-63.500.

King, Ralph W., Jr.; and Hjermstad, Hans U., to Johnson Electric Coil Company. Starting and operating circuit for gas discharge lamp. 4,286,193, Cl. 315-175.000.

Kiniwa, Hideaki: *See*—
Kobayashi, Yoshimichi; Tsuge, Yukio; Hirako, Susumu; and Kiniwa, Hideaki, 4,285,789, Cl. 204-181.00C.

Kintz, Donald P.: *See*—
Hardy, John F.; Kintz, Donald P.; and Taylor, Vaughn W., 4,285,846, Cl. 260-29.20E.

Kirby, Edward, to TRW Inc. Electrical connector. 4,285,565, Cl. 339-176.0MP.

Kircher, Morton S.: *See*—
Specht, Steven J.; and Kircher, Morton S., 4,285,793, Cl. 204-253.000.

Kirchlechner, Peter: *See*—
Kraus, Hermann; Kirchlechner, Peter; Rieger, Robert; and Schuck, Wolf-Dieter, 4,286,306, Cl. 361-242.000.

Kirkland, Joseph J.; and Yau, Wallace W., to Du Pont de Nemours, E. I., and Company. Method and apparatus for field flow fractionation. 4,285,810, Cl. 209-155.000.

Kirkland, Joseph J.: *See*—
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,285,809, Cl. 209-155.000.

Kirkpatrick, Allen R., to Spire Corporation. Electrostatic bonding using externally applied pressure. 4,285,714, Cl. 65-40.000.
Kirkpatrick, George F., to Union Carbide Corporation. Colored interlocking closure strips. 4,285,105, Cl. 24-201.00C.
Kiszelly, Eniko: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszelly, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.
Kita, Toru, to Nissan Motor Co., Ltd. Intake air flow rate detector. 4,285,246, Cl. 73-861.030.
Kitajima, Nobuo: *See*—
Ito, Michio; Kitajima, Nobuo; Kasai, Masanao; and Ishihara, Shunichi, 4,286,032, Cl. 430-55.000.
Kitamoto, Tatsuji: *See*—
Shirahata, Ryuji; and Kitamoto, Tatsuji, 4,286,299, Cl. 360-113.000.
Kitano, Nanahiko: *See*—
Sato, Nobuhiro; Yamaguchi, Yoshinobu, Kodama, Hitoshi; Koshdyama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.
Kitchen, John P.; and Riddle, Neville L., to Hoover Universal, Inc. Spring deck for seating structures. 4,285,080, Cl. 5-186.00R.
Kitoh, Kyosuke: *See*—
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,285,940, Cl. 424-246.000.
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Kitta, Hiroyuki; Aizawa, Shinichi; and Sawa, Hiroshi, to Hochiki Corporation. Detector coupling mechanism. 4,286,159, Cl. 250-381.000.
Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Reeves, David L. R.; and Wood, Glenn P., to Ciba-Geigy AG. Azo compounds useful in a photographic dye diffusion transfer process. 4,285,859, Cl. 260-152.000.
Kiwaki, Hisakatsu: *See*—
Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, 4,286,211, Cl. 324-117.00R.
Kleebaur, Karl: *See*—
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,286,186, Cl. 310-89.000.
Klemarczyk, Philip: *See*—
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.
Klijnstra, Tiede, to U.S. Philips Corporation. Toaster. 4,285,272, Cl. 99-391.000.
Klingel, Edward R. Mobile wood splitter. 4,285,374, Cl. 144-193.00A.
Klinteberg, G. Rune; Johansson, N. A. Bertil; Johansson, B. Lennart; and Dahlgren, Christer H., to Stefa Industri Aktiebolag. Sealing device for bearings, especially roll bearings. 4,285,526, Cl. 277-153.000.
Klobe, Martin, to Siemens Aktiengesellschaft. Flow measuring device. 4,285,247, Cl. 73-861.240.
Klopfer, Anton: *See*—
Keunecke, Gerhard; Klopfer, Anton; and Sterck, Lothar, 4,285,870, Cl. 260-346.700.
Keunecke, Gerhard; Klopfer, Anton; and Sterck, Lothar, 4,285,871, Cl. 260-346.700.
Kloster, Kenneth D. Piston rod runout gauge. 4,285,132, Cl. 33-172.00R.
Klotz, Marvin R.; and Ely, Stephen R., to Standard Oil Company (Indiana). Method of preparing a metal-cation-deficient crystalline borosilicate. 4,285,919, Cl. 423-277.000.
Knecht, Eduard: *See*—
Habermeier, Jurgen; Knecht, Eduard; and Gisler, Rudolf, 4,286,097, Cl. 548-309.000.
Knight, Brian V. Building structure. 4,285,174, Cl. 52-81.000.
Knight, Stuart R., to Bayside Holding Corp. Method for removal of hydrogen sulfide from sour gas streams. 4,285,917, Cl. 423-224.000.
Knodler, Reinhard; and Bohme, Gotthold, to Battelle-Institut e.V. Production of a porous aluminum matrix for the negative electrode of a galvanic lithium aluminum metal sulfide element. 4,285,828, Cl. 252-182.100.
Knoll International, Inc.: *See*—
Zapf, Otto W., 4,285,544, Cl. 297-440.300.
Kobayashi, Hiroaki: *See*—
Asakura, Toshiyuki; Noguchi, Yukio; and Kobayashi, Hiroaki, 4,286,018, Cl. 428-332.000.
Kobayashi, Masatsune: *See*—
Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, 4,285,575, Cl. 350-357.000.
Kobayashi, Robert J.: *See*—
Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,285,200, Cl. 60-607.000.
Kobayashi, Yoshimichi; Tsuge, Yukio; Hirako, Susumu; and Kiniwa, Hideaki, to Mitsubishi Chemical Industries, Ltd. Cationic electrodeposition process. 4,285,789, Cl. 204-181.00C.
Kobe, Inc.: *See*—
Erickson, John W., 4,285,401, Cl. 166-303.000.
Erickson, John W., 4,286,185, Cl. 310-87.000.
Kobishi Electric Co., Ltd.: *See*—
Ishii, Tadashi, 4,286,259, Cl. 340-396.000.
Kobylar, Alex W.: *See*—
Stelte, David J.; and Kobylar, Alex W., 4,286,119, Cl. 179-18.0FC.
Koch, George B. Combining drawers. 4,285,559, Cl. 312-298.000.
Kochanowski, John E., to General Electric Company. Method of preparing polyester carbonates. 4,286,083, Cl. 528-173.000.
Kodama, Hitoshi: *See*—
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshdyama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.
Koehler Manufacturing Company: *See*—
Guimond, Roy A.; Reed, Nanci W.; and Gulliksen, John E., 4,285,121, Cl. 29-623.100.
Kogler, Georg; Kuhnlein, Hans; and Schalk, Karl, to Siemens Aktiengesellschaft. Electronic motor having a multi-pole external rotor. 4,286,184, Cl. 310-67.00R.
Kohn, Gustave K.; and Baer, Ted A., to Zoecon Corporation. Cyclopropyl and phenylisobutylimidates. 4,285,879, Cl. 260-453.700.
Koike, Hiroyasu. Mold device for an injection molding machine. 4,285,659, Cl. 425-547.000.
Koike, Tadao: *See*—
Kanno, Tadaaki; and Koike, Tadao, 4,285,510, Cl. 271-127.000.
Koizumi, Kyoko: *See*—
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
Koizumi, Sachio; and Yamaguchi, Akio, to Hitachi, Ltd. Color cathode ray tube with shadow mask having inwardly bent skirt portions. 4,286,189, Cl. 313-402.000.
Kojima, Shigeru: *See*—
Hayashi, Masakatsu; Tanaka, Takeo; Natori, Tatsuo; Aizawa, Tatsushi; Kojima, Shigeru; and Senshu, Takao, 4,285,385, Cl. 164-9.000.
Kokusai Gijutsu Kaihatsu Co., Ltd.: *See*—
Nakauchi, Shunsaku; and Watase, Fumio, 4,286,294, Cl. 360-27.000.
Kolar, Karel, to Racionalizacni a experimentalni laborator. Universal apparatus for evaluating calendar data. 4,285,147, Cl. 40-109.000.
Kolar, Karel, to Racionalizacni a experimentalni laborator. Universal round clock calendar. 4,285,148, Cl. 40-115.000.
Kolbinger, Hans J.: *See*—
Hansen, Guenter; Kolbinger, Hans J.; Scheuermann, Horst; and Zeidler, Georg, 4,285,860, Cl. 260-152.000.
Kollmorgen Technologies Corporation: *See*—
Langley, Lawrence W., 4,286,180, Cl. 310-12.000.
Kolm, Harvard B., to Hydraulic Servocontrols Corporation. Control valve construction. 4,285,363, Cl. 137-596.170.
Komanduri, Rangachary, to General Electric Company. Tool for trueing and dressing a grinding wheel. 4,285,324, Cl. 125-11.00R.
Kombi-Lift Montage- und Handelsgesellschaft mbH: *See*—
Schneider, Erich, 4,285,501, Cl. 254-394.000.
Komhyr, Walter D. Pump piston cylinder assembly with exterior ring seals. 4,285,642, Cl. 417-465.000.
Kommissari, Karl, to BBC Brown, Boveri & Co. Ltd. Forced commutation power converter arrangement in reverse voltage free circuit configuration. 4,286,317, Cl. 363-136.000.
Kondo, Kenshi. Apparatus for soldering printed circuit boards. 4,285,457, Cl. 228-36.000.
Kondo, Shiro, to Alps Electric Co., Ltd. Structure for fixing a knob to a part to be operated through the knob. 4,285,097, Cl. 16-121.000.
Kondo, Yoshihide: *See*—
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,285,838, Cl. 252-469.000.
Konian, Richard R.; and Walsh, James L., to International Business Machines Corporation. Push pull switch utilizing two current switch circuits. 4,286,179, Cl. 307-455.000.
Konishi, Kunihiko: *See*—
Ishida, Nobuyoshi; Kondo, Yoshihide; Konishi, Kunihiko; and Kamio, Hiroyuki, 4,285,838, Cl. 252-469.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, 4,286,053, Cl. 430-389.000.
Uehara, Masafumi; and Itano, Mitsuyoshi, 4,285,727, Cl. 106-22.000.
Kononov, Evgeny A.: *See*—
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.
Konstant, Anthony N.; and Weider, John J., to Speedshelf International, Inc. Integral locking tab for storage racks. 4,285,436, Cl. 211-192.000.
Kopish, Stephen P.; and Costantino, Richard, to Motorola, Inc. Pushbutton switch assembly. 4,286,131, Cl. 200-340.000.
Koppers Company, Inc.: *See*—
Falck, Glenn H.; and Boose, James R., 4,285,271, Cl. 99-348.000.
Kopse, Odon: *See*—
Eblen, Ewald; Hofmann, Karl; and Kopse, Odon, 4,285,471, Cl. 239-533.400.
Koser, Richard, to Draf Tool Co., Inc. Automatic refrigerant recovery, purification and recharge apparatus. 4,285,206, Cl. 62-126.000.

Koshdyama, Isamu: *See*—
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshdyama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.

Kosoczky, Ibolya: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszelly, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Kossman, Erich: *See*—
Eberhard, Riessland; Beyer, Helmut; and Kossman, Erich, 4,286,197, Cl. 318-38.000.

Kostan, Charles C.: *See*—
Fox, David H.; Kuhn, Robert L.; and Kostan, Charles C., 4,285,306, Cl. 123-146.50A.

Koster, Robertus J. C.: *See*—
Barrat, Christian R.; Wevers, Jean; and Koster, Robertus J. C., 4,285,841, Cl. 252-559.000.

Kovach, Stephen M., to Ashland Oil, Inc. Catalyst for alkylating aromatics with olefins. 4,285,835, Cl. 252-432.000.

Kowalski, Joseph W., to B-Line Systems, Inc. Fastener. 4,285,379, Cl. 411-85.000.

Kowalski, Thomas A.: *See*—
Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., 4,285,639, Cl. 417-218.000.

Koyama, Kazuo: *See*—
Furukawa, Takashi; and Koyama, Kazuo, 4,285,741, Cl. 148-12.00D.

Koyama, Kenichi: *See*—
Nomura, Harehiko; Koyama, Kenichi; and Terao, Kazuhiko, 4,285,120, Cl. 29-599.000.

Kozawa, Akiya, to Union Carbide Corporation. Heat-treated, organic solvent-treated manganese dioxide. 4,285,122, Cl. 29-623.100.

Kozhemyakin, Valentin G.: *See*—
Kaluniants, Kalust A.; Kozhemyakin, Valentin G.; Gracheva, Irina M.; and Voino, Ljudmila I., 4,286,065, Cl. 435-315.000.

Kraft, Derald H., to Dyneer Corporation. Mechanical belt tensioner construction. 4,285,676, Cl. 474-135.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Janner, Karl; Gregorius, Klaus; and Schuster, Eberhard, 4,286,153, Cl. 250-281.000.
Niemann, Hans-Joachim, 4,285,705, Cl. 55-277.000.

Kramer, Petrus A.; and Verbrugge, Pieter A., to Shell Oil Company. Trihalocyclopropyl carbonates. 4,285,882, Cl. 260-463.000.

Kraus, Helmut: *See*—
Botsch, Franz; and Kraus, Helmut, 4,286,078, Cl. 525-317.000.

Kraus, Hermann; Kirchlechner, Peter; Rieger, Robert; and Schuck, Wolf-Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Circuit arrangement for comparing the synchronism or tracking between two analog signals. 4,286,306, Cl. 361-242.000.

Kremer, Gilbert V. H.; Pechmeze, Jacques P. E.; and Sureau, Robert F. M., to P C U K Produits Chimiques Ugine Kuhlmann. Dyestuffs derived from triphenylmethane, their preparation and use. 4,285,696, Cl. 8-654.000.

Kress, Edward S. Method and apparatus for handlng and dry quenching coke. 4,285,772, Cl. 201-39.000.

Kresse, Peter: *See*—
Hund, Franz; and Kresse, Peter, 4,285,726, Cl. 106-14.050.

Kruder, George A., to HPM Corporation. Injection molding machine with multichannel wave screw. 4,285,600, Cl. 366-89.000.

Kruger, Wolfgang: *See*—
Rossman, Axel; Hoffmuller, Wilhelm; and Kruger, Wolfgang, 4,285,634, Cl. 416-97.00A.

Kruse, Jurgen: *See*—
Kuehnle, Manfred R.; and Kruse, Jurgen, 4,286,031, Cl. 430-44.000.

Kubela, Rudolf; Edwards, Philip D.; and Hughes, Lisa A., to Canada Packers Inc. 4-Arylpiperidine derivatives. 4,286,095, Cl. 546-213.000.

Kuberski, Lawrence F.: *See*—
Luebbert, William K.; Blankenship, Thomas O.; and Kuberski, Lawrence F., 4,285,620, Cl. 408-212.000.

Kubota Ltd.: *See*—
Hino, Masamichi; and Itani, Seiishi, 4,285,411, Cl. 177-25.000.
Kawasaki, Masami; Ohtori, Toschimi; Sukigara, Kunisuke; and Satoh, Mitsuo, 4,285,161, Cl. 47-9.000.

Kucharewski, Nicholas; and Gillberg, James E., to RCA Corporation. Gated oscillator. 4,286,233, Cl. 331-111.000.

Kudirka, Alvydas A.: *See*—
Chi, Lawrence L.; and Kudirka, Alvydas A., 4,285,770, Cl. 176-65.000.

Kuehnle, Manfred R.; and Kruse, Jurgen, to Coulter Stork U.S.A., Inc. Electrostatic multicolor composite printing method and apparatus. 4,286,031, Cl. 430-44.000.

Kugel, Christoph: *See*—
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,286,186, Cl. 310-89.000.

Kuhn, Robert L.: *See*—
Fox, David H.; Kuhn, Robert L.; and Kostan, Charles C., 4,285,306, Cl. 123-146.50A.

Kuhnlein, Hans: *See*—
Kogler, Georg; Kuhnlein, Hans; and Schalk, Karl, 4,286,184, Cl. 310-67.00R.

Kumagai, Chikanori: *See*—
Suzuki, Takeshi; Hatamori, Takashi; Murao, Mikio; Nezuka, Minoru; Kumagai, Chikanori; and Takagishi, Masaharu, 4,285,142, Cl. 34-57.00E.

Kumano, Hiroshi: *See*—
Murakami, Kaoru; Okahisa, Mitsugu; Arita, Tomohiko; and Kumano, Hiroshi, 4,286,029, Cl. 429-219.000.

Kume, Takeshi, to Kabushiki Kaisha I.T.L. Apparatus for causing axial movement. 4,285,249, Cl. 74-89.150.

Kundin, Jane I. Carpet holder baseboard. 4,285,093, Cl. 16-17.000.

Kunz, Walter: *See*—
Gatzi, Karl; Baumann, Hanspeter; Kunz, Walter; and Gloor, Bernhard, 4,285,959, Cl. 424-270.000.

Kuo, Samuel C.: *See*—
Barbano, Normand; and Kuo, Samuel C., 4,286,271, Cl. 343-792.500.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Wagu, Masakatsu; Fukuda, Makoto; and Suzuki, Shirou, 4,285,797, Cl. 204-290.00R.

Kurmeier, Hans-Adolf: *See*—
Prucher, Helmut; Uhl, Jurgen; Kurmeier, Hans-Adolf; Rudolph, Volkmar; and Wahlig, Helmut, 4,285,961, Cl. 424-273.00R.

Kusters, Eduard; Hartmann, Werner; and Appenzeller, Valentin, to Kusters, Eduard. Coolable roller. 4,285,107, Cl. 29-129.500.

Kutseva, Lidia S.: *See*—
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.

Kuwabara, Kenichi: *See*—
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.

Kuzmina, Mariya A.: *See*—
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.

Kwasnitza, Hans-Dieter, to De La Rue Giori S.A. Method and apparatus for forming a stream of partly overlapping paper sheets or the like. 4,285,513, Cl. 271-270.000.

Labaw, Clifford S.; and Webb, Robert L., to SmithKline Corporation. N-Phenyl-N'-cyano-O-phenylisoureas. 4,285,878, Cl. 260-453.700.

La Grouw, Johannes: *See*—
Van Loghem, Johannes J.; and La Grouw, Johannes, 4,285,181, Cl. 52-404.000.

Laliberte, Laurent H.: *See*—
Garner, Andrew; and Laliberte, Laurent H., 4,285,787, Cl. 204-147.000.

Lambelin, Georges: *See*—
Niebes, Paul; Vincze, Andras; Roba, Joseph; Lambelin, Georges; Matagne, Daniel; Hanon, Etienne; and Franz, Michel, 4,285,964, Cl. 424-283.000.

Lambert, Gerard L., to Mattel, Inc. Toy racing set. 4,285,157, Cl. 46-202.000.

Lambert, Gordon K.: *See*—
Misiura, Thaddeus D.; and Lambert, Gordon K., 4,285,369, Cl. 138-149.000.

Lamm, Guenther; and Dehnert, Johannes, to BASF Aktiengesellschaft. Dyeing of surface coatings, organic solvents and petroleum products. 4,285,693, Cl. 8-521.000.

Lammel, Georg: *See*—
Willeitner, Eberhard; Hirschmann, Wilhelm; Maier, Erwin; Lammel, Georg; and Hass, Jurgen, 4,285,611, Cl. 403-374.000.

Lamprecht, Josef; and Ley, Gregor, to BASF Aktiengesellschaft. Goniophotometer for measuring the gloss and/or light diffusion of surfaces. 4,285,597, Cl. 356-446.000.

Lamy, Jacques E., to Compagnie Generale pour les Developpements. Structure allowing the attainment of a precise seabed location. 4,285,614, Cl. 405-203.000.

Landa, Benzion; Swidler, Ronald; and Gardiner, Kenneth W., to Savin Corporation. Method and apparatus for removing excess developing liquid from photoconductive surfaces. 4,286,039, Cl. 430-119.000.

Landa, Isaac J., to Neotec Corporation. Holographic diffraction grating system for rapid scan spectral analysis. 4,285,596, Cl. 356-308.000.

Landel, Robert F.: *See*—
Yen, Shiao-Ping S.; Rembaum, Alan; and Landel, Robert F., 4,285,819, Cl. 210-679.000.

Lando, Olga E.: *See*—
Chipens, Gunar I.; Mutulis, Felix K.; Lando, Olga E.; and Myshlyakova, Natalia V., 4,285,857, Cl. 260-112.50R.

Langdon, Glen G., Jr.; and Rissanen, Jorma J., to International Business Machines Corporation. Method and means for arithmetic coding utilizing a reduced number of operations. 4,286,256, Cl. 340-347.0DD.

Langlais, Jacques F.: *See*—
Dauge, Gilbert V.; and Langlais, Jacques F., 4,285,413, Cl. 177-210.00C.

Langley, Lawrence W., to Kollmorgen Technologies Corporation. Variable reluctance stepper motor. 4,286,180, Cl. 310-12.000.

Lanter, Kent J.: *See*—
Betz, Norman L.; Lanter, Kent J.; and Williams, Danny L., 4,285,974, Cl. 426-2.000.

Larbalestier, David C.: *See*—
Young, Morris S.; and Larbalestier, David C., 4,285,740, Cl. 148-11.50Q.

La Riviere, Philip D., to Varian Associates, Inc. Multi-element X-ray equalizing filter. 4,286,167, Cl. 250-510.000.

Larsen, Henry. Wind-instrument fingering guide. 4,285,263, Cl. 84-382.000.

Larson, Eric H., to Allied Chemical Corporation. Apparatus and method of monitoring temperature in a multi-cell electrolyzer. 4,285,786, Cl. 204-98.000.

Lassen, Niels; Boges, Klaus P.; Hansen, Peter B.; Buus, Jorn L. M.; and Bigler, Allan J., to Kefalas A/S. Xanthene and thioxanthene derivatives, compositions thereof and treatment therewith. 4,285,956, Cl. 424-267.000.

Latham, Allen, Jr., to Haemonetics Corporation. Apparatus for separation of blood into components thereof. 4,285,464, Cl. 233-26.000.

Latham, George R., Jr.: *See*—
Staebler, David L.; and Latham, George R., Jr., 4,286,212, Cl. 324-125.000.

Lay nee Konya, Aranka: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszelly, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Le Materiel Telephonique: *See*—
Houdard, Jean P., 4,286,326, Cl. 364-485.000.

Leach, Charles. Swash plate internal combustion engine. 4,285,303, Cl. 123-51.0BA.

Leach Corporation: *See*—
Schuessler, John C.; and Tapp, David J., 4,286,244, Cl. 335-230.000.

Leary, John E. Portable auxiliary door lock. 4,285,535, Cl. 292-293.000.

Leather Life, Inc.: *See*—
Willis, Monte B., 4,285,688, Cl. 8-94.10R.

Leavitt, Richard P.: *See*—
Morrison, Clyde A.; Wortman, Donald E.; Leavitt, Richard P.; and Karayianis, Nick, 4,286,230, Cl. 331-79.000.

Leclerc, Pierre: *See*—
Puech, Claude; Leclerc, Pierre; de Cremoux, Baudouin; Hirtz, Pierre; and Di Forte, Marie A., 4,286,232, Cl. 331-94.50H.

Lecointre, Christian: *See*—
Dewulf, Roger; Denis, Jean-Luc; Germain, Michel; and Lecointre, Christian, 4,286,140, Cl. 219-306.000.

Lectron Products, Inc.: *See*—
Slavin, Michael; and Telmet, Juhan, 4,286,257, Cl. 340-388.000.

Lee, Alexander Y., Jr.: *See*—
Gershberg, David N.; Lee, Alexander Y., Jr.; and Moore, William B., 4,286,260, Cl. 340-554.000.

Lee, Charles A., to Fairchild, Incorporated. Dewatering system. 4,285,816, Cl. 210-401.000.

Lee, Jannan G.: *See*—
Hagerty, Robert O.; Lee, Jannan G.; and Yi, Kenneth C., 4,285,602, Cl. 366-177.000.

LeFever, Randall H.: *See*—
Harvey, William J.; Flook, Glen E., Jr.; and LeFever, Randall H., 4,286,307, Cl. 362-15.000.

Lehmann, Helmut, to Artos Dr.-Ing. Meier-Windhorst KG (GmbH). System for fixing prints with reactive and vat dyes. 4,285,218, Cl. 68-5.00D.

Leiber, Heinz, to Robert Bosch GmbH. Hydraulic brake booster. 4,285,199, Cl. 60-550.000.

Leidich, Arthur J., to RCA Corporation. Amplifier with electrically controlled gain, with output suitable for direct coupling. 4,286,226, Cl. 330-254.000.

Leinberry, W. Stanley, to Enjoyable Products, Inc. Refillable dispensing apparatus. 4,285,074, Cl. 4-227.000.

Leistikow, Gerard K.; and Hales, Henry R., to Mattel, Inc. Toy toilet. 4,285,156, Cl. 46-14.000.

Leithauser, Horst: *See*—
Rigler, Josef K.; Ratajczak, Hans-Josef; Leithauser, Horst; and Trukenbrod, Karl, 4,286,071, Cl. 521-96.000.

Leland Stanford Junior University, Board of Trustees of the: *See*—
Auld, Bertram A.; and Elston, Gary W., 4,286,216, Cl. 324-237.000.

Lemelson, Jerome H. Adhesive bandage. 4,285,338, Cl. 128-155.000.

Lemelson, Jerome H. Game aiming device securable to television receiver cabinet. 4,285,523, Cl. 273-313.000.

Lemelson, Jerome H. Molding system. 4,285,903, Cl. 264-310.000.

Lenz, Henry G., to General Electric Company. Laminated rotor for a dynamoelectric machine and method of making same. 4,286,182, Cl. 310-61.000.

Leonov, Ivan P.: *See*—
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Leopold Kostal, Firma: *See*—
Berginski, Werner E., 4,286,126, Cl. 200-11.00C.

Le Page, Jean-Francois: *See*—
Jacquin, Yves; Davidson, Michel; and Le Page, Jean-Francois, 4,285,804, Cl. 208-48.00R.

Lerman, Russell E., to United States of America, Army. Low profile grenade fuze. 4,285,277, Cl. 102-487.000.

Le Roux, Yvon: *See*—
Le Rouzic, Jean; Demeure, Loic; and Le Roux, Yvon, 4,285,781, Cl. 204-15.000.

Le Rouzic, Jean; Demeure, Loic; and Le Roux, Yvon. Metal support for an electronic component interconnection network and process for manufacturing this support. 4,285,781, Cl. 204-15.000.

Les Manufactures de Saint Marcel: *See*—
Frau, Giuliano, 4,286,001, Cl. 428-68.000.

Leskinen, Seppo J.; and Pukkila, Olli J., to Oy Mercantile AB. Impeller in a centrifugal blower. 4,285,635, Cl. 416-185.000.

Lestradet, Maurice C. J. Device for guiding the displacement of a vehicle and in particular an agricultural machine. 4,286,151, Cl. 250-230.000.

Leuven Research and Development VZW: *See*—
Deruyttere, Andre E. A.; Delaey, Lucas J. A. E.; Aernoudt, Etienne A. D.; and Roos, Josef R., 4,285,739, Cl. 148-11.50C.

LeVeen, Harry H.: *See*—
Morcher, Kurt A.; Loones, Leo H.; and Binkhorst, Cornelius D., 4,285,072, Cl. 3-13.000.

LeVeen, Harry V.: *See*—
Armitage, David, 4,285,346, Cl. 128-422.000.

Levings, Nelson, Jr. Door closing apparatus. 4,285,094, Cl. 16-52.000.

Levinson, Vladimir A.: *See*—
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.

Lewis, Delbert S., to Boeing Company, The. Wing leading edge high lift device. 4,285,482, Cl. 244-207.000.

Lewis, J. Stephen, to Mattel, Inc. Toy shaving set for a doll. 4,285,155, Cl. 46-1.00R.

Lewis, Kenneth R.; and Meenan, Anthony C., to Vishay Intertechnology, Inc. Attachment of leads to precision resistors. 4,286,249, Cl. 338-275.000.

Lewis, Reuben. Method for preparing molded poultry product. 4,285,980, Cl. 426-249.000.

Lewis, Roger N.: *See*—
Pastorino, Ronald L.; and Lewis, Roger N., 4,285,866, Cl. 260-338.000.

Ley, Gregor: *See*—
Lamprecht, Josef; and Ley, Gregor, 4,285,597, Cl. 356-446.000.

Liauw, Koei-Liang: *See*—
Halle, Reidar; Peterson, David; Fisch, Michael A.; and Liauw, Koei-Liang, 4,285,877, Cl. 260-453.0RZ.

Liepinsh, Gunar K.: *See*—
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.

Likhite, Vilas V. Antigens comprising immunostimulant adjuvants and their use in immunotherapy. 4,285,930, Cl. 424-92.000.

Limjuco, Guadalupe A.; Karkhanis, Yashwant D.; and Carlo, Dennis J., to Merck & Co., Inc. *E. coli* enterotoxin vaccine for veterinary and human use. 4,285,931, Cl. 424-92.000.

Lindberg, Allan W. Illuminated changeable-display sign. 4,286,263, Cl. 340-717.000.

Lindstrom, Roald E.: *See*—
Flynn, Charles M., Jr.; Carnahan, Thomas G.; and Lindstrom, Roald E., 4,285,912, Cl. 423-43.000.

Linscheid, Larry L.; and Mueller, Philip M., to Boeing Co., The. Apparatus for mixing high and low pressure air from a jet engine. 4,285,466, Cl. 236-13.000.

Lipschutz, Paul, to Neiman S.A. Device for reading coded notches on keys. 4,285,574, Cl. 350-114.000.

Lissau, Frederic, to Sloan Valve Company. Slow closing faucet. 4,285,361, Cl. 137-454.600.

Lloyd, Edward R.; and Marowski, Raymond M., to International Business Machines Corporation. Escapement mechanism and backspace mechanism for a moving paper carriage typewriter having dual pitch capability. 4,285,605, Cl. 400-310.000.

Loeffel, Emil. Tool chest. 4,285,556, Cl. 312-244.000.

Logan, David J.; and Pavone, Robert J., to Gulf & Western Corporation. Device for translating and rotating a cutting platen with respect to a reciprocal cutter. 4,285,258, Cl. 83-410.000.

Long, Donald A.: *See*—
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., 4,285,146, Cl. 40-21.00C.

Long, William E.: *See*—
Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Reeves, David L. R.; and Wood, Glenn P., 4,285,859, Cl. 260-152.000.

Longoni, Angelo: *See*—
Galli, Remo; Gozzo, Franco; Palla, Ottorino; and Longoni, Angelo, 4,285,969, Cl. 424-304.000.

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Reed, Kenneth J.; and Lythgoe, Alan L., 4,286,008, Cl. 428-195.000.

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Pearce, Roy W. J.; Carbert, John; and MacDonald, John P. K., 4,285,994, Cl. 427-222.000.

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Mrenna, Stephen A.; Maier, Alfred E.; and Thomas, Glenn R., 4,286,242, Cl. 335-160.000.

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Willeitner, Eberhard; Hirschmann, Wilhelm; Maier, Erwin; Lammel, Georg; and Hass, Jurgen, 4,285,611, Cl. 403-374.000.

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Wahl, John F., 4,286,262, Cl. 340-694.000.

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Flinn, David R.; and Manger, Cheryl L., 4,285,784, Cl. 204-39.000.

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Oswald, Norman D.; and Mankey, Harry S., 4,285,627, Cl. 414-695.500.

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Molyneux-Berry, Robert B., 4,286,314, Cl. 363-55.000.

Mares, Frank; and Jacobson, Stephen E., to Allied Chemical Corporation. Catalyst and process for oxidation of organic substrates by hydrogen peroxide. 4,286,068, Cl. 521-53.000.

Marino, Francesco, to Indesit Industria Elettrodomestici Italiana S.p.A. Television receiver supply circuit. 4,286,292, Cl. 358-190.000.

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Mark, Victor, to General Electric Company. Process for preparing polycarbonate using certain nitrogen-containing heterocyclic compounds as catalysts. 4,286,084, Cl. 528-199.000.

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Marshall, Warren S. Surgical scissors. 4,285,344, Cl. 128-318.000.

Martin, Leonard I.; and Harms, Robert H. Refrigerant sub-cooling. 4,285,205, Cl. 62-113.000.

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Hicks, Ralph R.; and Martinez, Guadalupe J., 4,285,098, Cl. 16-145.000.

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Morrison, Howard J., 4,285,517, Cl. 273-1.0GC.

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Michel, Helmut; and Bulang, Wolfgang, 4,285,702, Cl. 55-33.000.

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Cook, Nathan H.; and Subramanian, Krishnamoorthy, 4,286,026, Cl. 428-607.000.

Masse, Daniel J.: *See*—
Green, Jerome J.; and Masse, Daniel J., 4,286,135, Cl. 219-10.55F.

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Masson Scott Thrissel Engineering Limited: *See*—
Chandler, Kenneth, 4,285,130, Cl. 33-132.00A.

Massucco, Arthur A.: *See*—
Merrill, Richard E.; and Massucco, Arthur A., 4,286,048, Cl. 430-284.000.

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Tsubakimoto, Tsuneo; Shimomura, Tadao; Irie, Yoshio; and Masuda, Yoshihiko, 4,286,082, Cl. 526-240.000.

Masunaga, Hiroaki: *See*—
Honjo, Seiichiro; Iijichi, Masaaki; Masunaga, Hiroaki; and Hara, Keiji, 4,285,716, Cl. 65-114.000.

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Matagne, Daniel: *See*—
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Matera, Giancarlo: *See*—
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Inoue, Kazuhiro; and Matsui, Fumio, 4,285,743, Cl. 149-2.000.

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Tsushima, Susumu; Matsumoto, Norichika; and Kato, Masayasu, 4,286,088, Cl. 544-16.000.

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Uno, Takeshi; Ueda, Hirotada; Ikeda, Sadahiro; Ejiri, Masakazu; and Matsuoka, Shinji, 4,286,146, Cl. 235-456.000.

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Murakami, Kaoru; Okahisa, Mitsugu; Arita, Tomohiko; and Kumano, Hiroshi, 4,286,029, Cl. 429-219.000.
Takeshita, Isao; Hozumi, Shiro; and Wakamatsu, Nobuhiko, 4,285,208, Cl. 62-141.000.

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Bass, Sidney; Cook, John S.; and May, Herbert, 4,285,159, Cl. 46-262.000.
Lambert, Gerard L., 4,285,157, Cl. 46-202.000.
Leistikow, Gerard K.; and Hales, Henry R., 4,285,156, Cl. 46-14.000.
Lewis, J. Stephen, 4,285,155, Cl. 46-1.00R.

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Veselkov, Alex A.; Glumov, Ivan F.; Zlotnikov, Leonid A.; Maiko, Viktor P.; and Matusevich, Jury F., 4,286,270, Cl. 343-113.0DE.

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McCullough, John W.: *See*—
Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., 4,286,322, Cl. 364-200.000.

McDonald, James A., to Union Carbide Corporation. Machine for folding plastic sheet material. 4,285,687, Cl. 493-444.000.

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McEntire, Edward E.; and Zimmerman, Robert L., to Texaco Development Corp. Novel polyisocyanurate catalysts. 4,286,072, Cl. 521-118.000.

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McGandy, Edward L., to Standard Oil Company (Ohio). Portable pH meter for effluents having a self-cleaning electrode chamber. 4,285,792, Cl. 204-195.00R.

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McHugh, Thomas. Building having solar heating system. 4,285,332, Cl. 126-429.000.

McIntyre, Robert T. Electronic closed loop servomechanism and electronic scuba regulator therefor. 4,285,339, Cl. 128-204.230.

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Herr, Charles H., Jr.; and McLees, Alan L., 4,285,213, Cl. 64-3.000.

McMahon, William H.; Fraula, Louis F.; Athey, Stuart E.; Johnson, Thomas M.; and Moore, Terrence W., to Hobart Corporation. Continuous duty chemically sanitizing batch rinse system. 4,285,352, Cl. 134-48.000.

McNair, Rosetta M. Sanitary napkin. 4,285,343, Cl. 128-287.000.

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Rasmussen, Chris R., 4,285,948, Cl. 424-251.000.

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Reid, Laurie M., 4,285,509, Cl. 271-10.000.
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Temple, Davis L., Jr., 4,286,093, Cl. 544-276.000.

Meday, Horace H. Electronic scoring device. 4,286,323, Cl. 364-411.000.

Medford, Miles E. Cassette holder. 4,285,558, Cl. 312-278.000.

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Lewis, Kenneth R.; and Meenan, Anthony C., 4,286,249, Cl. 338-275.000.

Meguro, Satoshi, to Hitachi, Ltd. Method of manufacturing high voltage MIS type semiconductor device. 4,285,116, Cl. 29-571.000.

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Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,285,867, Cl. 260-338.000.

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Arison, Byron H.; Goegelman, Robert T.; and Gullo, Vincent P., 4,285,963, Cl. 424-279.000.
Limjuco, Guadalupe A.; Karkhanis, Yashwant D.; and Carlo, Dennis J., 4,285,931, Cl. 424-92.000.
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Eidenschink, Rudolf; Pohl, Ludwig; Weber, Georg; and Del Pino, Fernando, 4,285,829, Cl. 252-299.630.
Prucher, Helmut; Uhl, Jurgen; Kurmeier, Hans-Adolf; Rudolph, Volkmar; and Wahlig, Helmut, 4,285,961, Cl. 424-273.00R.

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Block, Aleck; and Hasegawa, Hiroshi, 4,285,171, Cl. 51-337.000.

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Stewart, James B.; Woltmann, Klaus W.; Faris, Edwin E.; and Schmidt, Sheldon P., 4,285,813, Cl. 210-169.000.

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Giza, Gerald J.; and Welsch, John H., 4,285,783, Cl. 204-35.00N.

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Taylor, Richard J.; and Bennett, Phillip P., 4,286,291, Cl. 358-138.000.

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Clavin, Edward A., 4,285,460, Cl. 228-212.000.
Slavens, Clyde M., 4,285,458, Cl. 228-49.00B.
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Glenister, Paul R., 4,285,975, Cl. 426-29.000.

Miles, Peter D.: *See*—
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Milliken Research Corporation: *See*—
Higgins, Kenneth B.; and Pittman, Edgar H., 4,286,003, Cl. 428-95.000.
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Averill, Robert G., 4,285,070, Cl. 3-1.911.
Bennett, Richard E.; and Hittner, Mary A., 4,286,047, Cl. 430-280.000.
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Wong, Andrew H., 4,286,011, Cl. 428-220.000.

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Englemann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,286,054, Cl. 430-544.000.

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Shively, James F.; Evans, Steven J.; Jory, Howard R.; and Mizuhara, Yosuke M., 4,286,240, Cl. 333-252.000.

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Mobil Oil Corporation: *See*—
Allen, Linus S., 4,286,150, Cl. 250-270.000.
Audeh, Costandi A.; and Valyocsik, Ernest W., 4,285,922, Cl. 423-329.000.
Bloomquist, Marvin G.; Hoehn, Gustave L., Jr.; Norton, Lonnie J.; and Warner, Barry N., 4,286,218, Cl. 324-350.000.
Heiba, El-Ahmadi I.; and Dessau, Ralph M., 4,285,868, Cl. 260-343.600.
Herrington, F. John, 4,285,656, Cl. 425-467.000.

Moline, George A. Friction heat generator. 4,285,329, Cl. 126-247.000.

Molins, Desmond W., to Molins Limited. Method and apparatus for making composite filter rod. 4,285,678, Cl. 493-48.000.

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Wilkinson, Walter J.; and Serlin, Irving, 4,285,989, Cl. 427-14.100.

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Battisti, Ruggero; Casagrande, Francesco; and Bausani, Giovanni, 4,285,863, Cl. 260-176.000.
Galli, Remo; Gozzo, Franco; Palla, Ottorino; and Longoni, Angelo, 4,285,969, Cl. 424-304.000.

Montgomery, Lon W., to Westinghouse Electric Corp. Dynamoelectric machine. 4,286,183, Cl. 310-62.000.

Mooi, John, to Atlantic Richfield Company. Catalyst and process for conversion of hydrocarbons. 4,285,806, Cl. 208-120.000.

Moore, Charles B., to W. R. Grace & Co. Thermoset resin impregnated web and process of making. 4,286,030, Cl. 429-253.000.

Moore, Terrence W.: *See*—
McMahon, William H.; Fraula, Louis F.; Athey, Stuart E.; Johnson, Thomas M.; and Moore, Terrence W., 4,285,352, Cl. 134-48.000.

Moore, William A., to A. E. McKenzie Co. Ltd. Self-watering planter. 4,285,164, Cl. 47-69.000.

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Gershberg, David N.; Lee, Alexander Y., Jr.; and Moore, William B., 4,286,260, Cl. 340-554.000.

Morcher, Kurt A.; Loones, Leo H.; and Binkhorst, Cornelius D., to LeVeen, Harry H. Anterior-posterior intraocular lens. 4,285,072, Cl. 3-13.000.

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Mori, Eizo. Tape end joining apparatus. 4,285,757, Cl. 156-350.000.

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Yamaki, Kiyoshi; and Morimoto, Yoshiro, 4,285,252, Cl. 74-866.000.

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Kauffman, Samuel L.; and Morin, John O., 4,286,265, Cl. 340-754.000.

Morong, William H., III, to Analog Devices, Incorporated. Isolation amplifier. 4,286,225, Cl. 330-10.000.

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Morris, Edward L., Jr.: *See*—
Zins, Howard M.; and Morris, Edward L., Jr., 4,286,012, Cl. 428-252.000.

Morris, Gerald L.: *See*—
Ottesen, Robert B.; and Morris, Gerald L., 4,286,289, Cl. 358-125.000.

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Hufford, Jack E.; and Mosmeier, William E., 4,285,143, Cl. 34-93.000.
Moss, Edward L., to Moss Machinery Manufacturers, Inc. Carton erecting machine. 4,285,682, Cl. 493-316.000.
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Moss, Robert G., to Preway Inc. Fireplace construction with adaptable combustion air inlet. 4,285,326, Cl. 126-121.000.
Moti, Samuel. X-Ray face mask and chest shield device. 4,286,170, Cl. 250-520.000.
Motomuro, Hisanao: *See*—
Hara, Haruichi; Kanzaki, Toshihide; Motomuro, Hisanao; and Adachi, Akiyoshi, 4,285,927, Cl. 423-535.000.
Motoren-und Turbinen-Union Munchen GmbH: *See*—
Rossman, Axel; Hoffmuller, Wilhelm; and Kruger, Wolfgang, 4,285,634, Cl. 416-97.00A.
Motorola Inc.: *See*—
Daniel, Sam M.; and Myers, Michael H., 4,286,268, Cl. 343-100.0LE.
Eichler, Jay H.; and Gasparaitis, Bernard, 4,286,335, Cl. 455-89.000.
Jarrett, Robert B.; and Pace, Wilson D., 4,286,176, Cl. 307-261.000.
Kopish, Stephen P.; and Costantino, Richard, 4,286,131, Cl. 200-340.000.
Olivenbaum, James E.; and Illgen, Fritz, 4,286,241, Cl. 335-151.000.
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Moustakas, Theodore D., to Exxon Research & Engineering Co. Plasma etching of amorphous silicon (SE-35). 4,285,762, Cl. 156-643.000.
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Brady, Joseph M.; and Peterson, Harold S., 4,285,084, Cl. 10-73.000.
Mt. Sinai School of Medicine of the City University of N.Y.: *See*—
Cort, Joseph H.; and Fischman, Alan, 4,285,858, Cl. 260-112.50R.
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Terrill, Garrett D.; and Edwards, Lynn D., 4,285,368, Cl. 138-89.000.
Mueller, Donald M.: *See*—
Kautzer, Ronald E.; and Mueller, Donald M., 4,285,109, Cl. 29-157.00R.
Mueller, Philip M.: *See*—
Linscheid, Larry L.; and Mueller, Philip M., 4,285,466, Cl. 236-13.000.
Mueller, Walter, to Ewikon Entwicklung und Konstruktion GmbH & Co. Kommanditgesellschaft. Nozzle for a plastics injection molding machine, an extruder orifice, or a hot-chamber tool. 4,285,660, Cl. 425-549.000.
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Muller, Marcel: *See*—
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Mullins, Albert A., II, to Baker International Corporation. Releasing tool for pressure activated packer. 4,285,400, Cl. 166-179.000.
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Weichman, Bernard E., 4,285,547, Cl. 299-2.000.
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Grearson, Kenneth R.; and Watson, Robert, Jr., 4,285,173, Cl. 52-73.000.
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Murao, Mikio: *See*—
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Murphy, Rose M.: *See*—
Akin, Cavit; and Murphy, Rose M., 4,285,976, Cl. 426-60.000.
Murr, William C., to Synemed, Inc. Color vision perception testing device. 4,285,580, Cl. 351-35.000.
Murray, E. Donald; Myers, Chester D.; and Barker, Larry D., to General Foods, Limited. Protein isolate product. 4,285,862, Cl. 260-123.500.
Muskat, Josef, to Passavant-Werke Michelbacher Huette. Process of treating wastewater with oxygen. 4,285,818, Cl. 210-614.000.
Muster, Hans: *See*—
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Mutulis, Felix K.: *See*—
Chipens, Gunar I.; Mutulis, Felix K.; Lando, Olga E.; and Myshlyakova, Natalia V., 4,285,857, Cl. 260-112.50R.
Myer, Jon H., to Hughes Aircraft Company. Zone purification of cylindrical ingots. 4,285,760, Cl. 156-617.00H.
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Nagakubo, Yoshio; and Takano, Masayuki, to Sony Corporation. Helical scan recorder having capstan motor speed responsive to a frequency of a command signal. 4,286,199, Cl. 318-327.000.
Nagasu, Takeshi: *See*—
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Tanaka, Yasuo; Shimokawa, Kenji; and Nagatomo, Muneshige, 4,285,333, Cl. 126-433.000.
Nagy, Emery J. Tire pressure sensing and alarm system. 4,286,253, Cl. 340-58.000.
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Image forming materials and image forming process. 4,286,045, Cl. 430-270.000.
Nakamura, Akira: *See*—
Yoshida, Mitsuo; Nakamura, Akira; Ohmure, Keiichi; and Ono, Atsuo, 4,285,798, Cl. 204-290.00F.
Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, to Hitachi, Ltd. Direct current detecting device using saturable reactors. 4,286,211, Cl. 324-117.00R.
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Nakazeki, Tsugito; and Yasuda, Yoshinobu, to NTN Toyo Bearing Co., Ltd. Air flow measuring device for internal combustion engines. 4,285,312, Cl. 123-378.000.
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Byrne, Joe L.; Kobayashi, Robert J.; and Nancarrow, James H., 4,285,200, Cl. 60-607.000.
Narasimhan, Mandayam C., to Allied Chemical Corporation. Continuous casting method and apparatus for making defined shapes of thin sheet. 4,285,386, Cl. 164-463.000.
Nash, Dudley O., to General Electric Company. Apparatus and method for controlling fan duct flow in a gas turbine engine. 4,285,194, Cl. 60-261.000.
Nash, Martin E.; and Huxley, Edward E., to Phillips Petroleum Company. Sulfolene hydrogenation. 4,286,099, Cl. 549-87.000.
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Basily, Basily B.; Sansome, Dennis H.; and Jones, Gerald M., 4,285,234, Cl. 73-862.650.
Pratt, Michael W. T., 4,285,924, Cl. 423-390.000.
Natori, Tatsuo: *See*—
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Nazarova, Sima I.: *See*—
Shkatov, Alexandr S.; Mazurovsky, Boris Y.; Sokolov, Vasily I.; Dmitrichenko, Viktor A.; Nazarova, Sima I.; and Fedorova, Ljudmila M., 4,285,224, Cl. 72-56.000.

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Ben-Nathan, Samuel; Neumeister, Marwin G.; Shats, Mikhail; and McCallum, Robert S., 4,286,149, Cl. 250-223.00R.
Neamtu, Nicolae, to Gillette Company, The. Chuck assembly. 4,285,528, Cl. 279-2.00R.
Neary, Michael P. Food spoilage indicator. 4,285,697, Cl. 23-230.0LC.
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Negi, Shigeto: *See*—
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
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Nelson, Ann J. Sanitary commode mat. 4,285,075, Cl. 4-252.00A.
Nelson, Carl L.; Haynes, Darrel W.; and Weber, Michael J. Method of securing a prosthesis using cement spacers. 4,285,071, Cl. 3-1.912.
Nelson, Eugene L.: *See*—
Kaufman, Vernon R.; and Nelson, Eugene L., 4,285,305, Cl. 123-146.50A.
Neotec Corporation: *See*—
Landa, Isaac J., 4,285,596, Cl. 356-308.000.
Nessler, Hermann: *See*—
Hiesinger, Edwin; Keplinger, Klaus; and Nessler, Hermann, 4,285,821, Cl. 210-777.000.
Neubert, Terry C., to General Tire & Rubber Company, The. Adhesion of polyamide or polyester cords to rubber. 4,285,850, Cl. 260-29.6RB.
Neukirch, Ed: *See*—
Hawrylo, Stan; Neukirch, Ed; and Eberle, William J., 4,285,537, Cl. 294-93.000.
Neumeister, Marwin G.: *See*—
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Nevedomsky, Evgeny N.: *See*—
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Newkirk, Chauncey: *See*—
Illing, Henry; and Newkirk, Chauncey, 4,285,500, Cl. 251-367.000.
Newroyd Limited: *See*—
Chambers, George; and Hall, Kenneth F., 4,285,285, Cl. 112-79.0FF.
Neyhart, James H.; Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., to Xerox Corporation. Trapping layer overcoated inorganic photoresponsive device. 4,286,033, Cl. 430-58.000.
Nezuka, Minoru: *See*—
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Ngoc, Hoan N.: *See*—
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NHK Spring Co., Ltd.: *See*—
Sakai, Yoshihiro; Takahashi, Jun; Satoh, Toshiaki; and Ohno, Akira, 4,285,227, Cl. 72-240.000.
Nichirin Rubber Industrial Co., Ltd.: *See*—
Katayama, Toshiyuki; Agura, Kiyokazu; and Matsuda, Masayuki, 4,285,534, Cl. 285-119.000.
Nidola, Antonio: *See*—
de Nora, Vittorio; Nidola, Antonio; and Spaziante, Placido M., 4,285,799, Cl. 204-290.00F.
Niebes, Paul; Vincze, Andras; Roba, Joseph; Lambelin, Georges; Matagne, Daniel; Hanon, Etienne; and Franz, Michel, to Continental Pharma. Salts of (+)-catechine, their preparation and use, and compositions containing these salts. 4,285,964, Cl. 424-283.000.
Niederdellmann, Georg: *See*—
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Niemann, Hans-Joachim, to Kraftwerk Union Aktiengesellschaft. Apparatus for influencing the boundary layers at walls. 4,285,705, Cl. 55-277.000.
Niemeyer, Wolfgang: *See*—
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Nifco Inc.: *See*—
Hara, Kunio, 4,286,248, Cl. 337-403.000.
Nightingale, Douglas D. J., to Imperial Chemical Industries Limited. Control valves. 4,285,498, Cl. 251-214.000.
Nigrin, Jaroslava M., to Corning Glass Works. Lead-free and cadmium-free frits. 4,285,731, Cl. 106-48.000.
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Nippon Electric Company, Ltd.: *See*—
Minemura, Kouichi; and Uchida, Teiji, 4,285,570, Cl. 350-96.180.
Sakoe, Hiroaki, 4,286,115, Cl. 179-1.0SD.
Nippon Kayaku Kabushiki Kaisha: *See*—
Yoshikawa, Hiroshi, 4,285,883, Cl. 260-465.00G.
Nippon Kogaku K.K.: *See*—
Matsumaru, Shizuo, 4,285,729, Cl. 106-47.00Q.
Nippon Oil and Fats Co., Ltd.: *See*—
Inoue, Kazuhiro; and Matsui, Fumio, 4,285,743, Cl. 149-2.000.
Tanabe, Rippei; Yokoyama, Yuji; and Hirano, Jiro, 4,285,872, Cl. 260-348.120.
Nippon Sheet Glass Co., Ltd.: *See*—
Honjo, Seiichiro; Ijichi, Masaaki; Masunaga, Hiroaki; and Hara, Keiji, 4,285,716, Cl. 65-114.000.
Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Hara, Haruichi; Kanzaki, Toshihide; Motomuro, Hisanao; and Adachi, Akiyoshi, 4,285,927, Cl. 423-535.000.
Tsubakimoto, Tsuneo; Shimomura, Tadao; Irie, Yoshio; and Masuda, Yoshihiko, 4,286,082, Cl. 526-240.000.
Nippon Soken, Inc.: *See*—
Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,285,319, Cl. 123-585.000.
Ina, Toshikazu; Kawai, Hisasi; and Matsui, Takeshi, 4,285,322, Cl. 123-630.000.
Nippon Steel Corporation: *See*—
Furukawa, Takashi; and Koyama, Kazuo, 4,285,741, Cl. 148-12.00D.
Nippon Telegraph and Telephone Public Corporation: *See*—
Imamura, Saburo; Sugawara, Shungo; and Sato, Hirotsugu, 4,286,049, Cl. 430-296.000.
Okubo, Tsuneo; Hamamoto, Nobuo; and Ichino, Kazuo, 4,286,154, Cl. 250-307.000.
Nippondenso Co., Ltd.: *See*—
Takahara, Yasuo; Hayashi, Shigeo; Yamada, Shizuo; and Shibata, Norio, 4,285,317, Cl. 123-568.000.
Nishimatsu, Saburo: *See*—
Nakamura, Masato; Nishimatsu, Saburo; Itoh, Toshitake; and Moronuki, Katsumi, 4,286,017, Cl. 428-328.000.
Nishiyama, Hissai, to Yoshida Kogyo K. K. Method for guiding warp threads with a back reed. 4,285,371, Cl. 139-97.000.
Nishizima, Hideyo; Ema, Hideaki; Tamura, Hiroshi; and Akiyoshi, Hideki, to Ricoh Company, Ltd. Halogen doped selenium-tellurium alloy electrophotographic photoconductor. 4,286,035, Cl. 430-85.000.
Nissan Motor Co., Ltd.: *See*—
Harada, Hideo; and Imai, Eiji, 4,285,540, Cl. 296-192.000.
Inamoto, Hiroshi, 4,285,103, Cl. 411-508.000.
Kita, Toru, 4,285,246, Cl. 73-861.030.
Takahashi, Koichi; and Kato, Yoshiaki, 4,285,089, Cl. 15-250.020.
Yamaki, Kiyoshi; and Morimoto, Yoshiro, 4,285,252, Cl. 74-866.000.
Yoneda, Kenji; Yamamoto, Tadahiro; and Sugihara, Kunihiko, 4,285,318, Cl. 123-568.000.
Nittetu Chemical Engineering Ltd.: *See*—
Akune, Mikio, 4,285,820, Cl. 210-774.000.
Nittobo Itamikako Co., Ltd.: *See*—
Ito, Shimpei; Daimon, Masaru; and Kato, Tadashi, 4,285,694, Cl. 8-532.000.
Noar, Raymond; and Blache, Louis J., to Rockwell International Corporation. Two-degree-of-freedom gyroscope. 4,285,248, Cl. 74-5.00F.
Noda, Fumiyoshi: *See*—
Mizusawa, Shinichiro; Akamatsu, Hideaki; Noda, Fumiyoshi; and Watanabe, Yuji, 4,285,909, Cl. 422-179.000.
Nogaj, Alfred: *See*—
David, Karl-Heinz; Nogaj, Alfred; and Rinkler, Heinrich, 4,286,076, Cl. 525-221.000.
Noguchi, Yukio: *See*—
Asakura, Toshiyuki; Noguchi, Yukio; and Kobayashi, Hiroaki, 4,286,018, Cl. 428-332.000.
Nommensen, Johan P., to Stamicarbon, B.V. Device for mixing two fluids. 4,285,367, Cl. 137-888.000.
Nomoto, Seiichiro: *See*—
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,285,940, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.
Nomura, Harehiko; Koyama, Kenichi; and Terao, Kazuhiko. Superconductor covered with reinforced aluminum matrix and method for manufacture thereof. 4,285,120, Cl. 29-599.000.
Norda, Incorporated: *See*—
Saldarini, Albert V.; and Doerig, Robert, 4,285,983, Cl. 426-534.000.
Nortene: *See*—
Pavy, Michel; and Casaert, Rene, 4,285,899, Cl. 264-180.000.
North, Bernard F., to Sun Chemical Corporation. Novel reactants for crosslinking textile fabrics. 4,285,690, Cl. 8-186.000.
North, Royston J., to Walker Crosweller & Company Limited. Thermostatic devices. 4,285,465, Cl. 236-12.00A.
Northern Telecom Limited: *See*—
Olszewski, Edward J.; Hundrieser, Dieter H.; and Ostapovitch, Harold J., 4,286,121, Cl. 179-98.000.
Norton, Lonnie J.: *See*—
Bloomquist, Marvin G.; Hoehn, Gustave L., Jr.; Norton, Lonnie J.; and Warner, Barry N., 4,286,218, Cl. 324-350.000.

Norton, Richard V.; and Fisher, Dennis H., to Ashland Oil, Inc. High density fuel compositions. 4,286,109, Cl. 585-14.000.

Novak, John D., to Owens-Illinois, Inc. Method of initiating operation of tubular heat exchanger for preheating pulverous glass batch. 4,285,717, Cl. 65-134.000.

Novak, John D.: *See—*
Mathias, Richard G.; Novak, John D.; Rough, Robert R., Sr.; Small, Owen M.; and Willinger, Sigmund, 4,285,718, Cl. 65-134.000.

Novinsky, Vladislav K.: *See—*
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

NTN Toyo Bearing Co., Ltd.: *See—*
Nakazeki, Tsugito; and Yasuda, Yoshinobu, 4,285,312, Cl. 123-378.000.

Numata, Saburo, to Fuji Photo Optical Co., Ltd. Exposure control compensating means for close-up photography. 4,285,585, Cl. 354-33.000.

Nyffenegger, Alfred, to Autelca AG. Monitoring device for the coin container of a coin collecting mechanism. 4,285,351, Cl. 133-1.00R.

Oakland Corporation, The: *See—*
Wallace, Richard B., 4,285,378, Cl. 411-258.000.

Oce-Nederland B.V.: *See—*
Hendriksma, Roelof R., 4,286,036, Cl. 430-100.000.
van Lomm, Gerard J. E. H., 4,286,040, Cl. 430-127.000.

Oce-van der Grinten: *See—*
van de Vorle, Wilhelmus J. M., 4,286,041, Cl. 430-149.000.

Oce-van der Grinten N.V.: *See—*
Hectors, Adrianus M. P.; and Crommentuyn, Gerardus J., 4,286,037, Cl. 430-107.000.

Odioso, Raymond C.: *See—*
Dimond, Harold L.; Odioso, Raymond C.; and Reavill, Roger E., 4,286,016, Cl. 428-311.000.

Odom, Roger K., to Combustion Engineering, Inc. Load-responsive treater controller. 4,286,206, Cl. 323-244.000.

Oebser, Alfred L.; and Porter, David L., to Orthomedics, Inc. Scoliosis orthotic system. 4,285,336, Cl. 128-78.000.

Oellerking, Willi, to Schleswiger Tauwerkfabrik Christian Oellerking. Repair patch for container and lorry sheets. 4,286,007, Cl. 428-194.000.

Ogata, Fumio: *See—*
Nakamura, Kiyoshi; Ishikawa, Hiroaki; Kiwaki, Hisakatsu; and Ogata, Fumio, 4,286,211, Cl. 324-117.00R.

Ogata, Kazumi, to Senju Pharmaceutical Co., Ltd. Cleaning composition for contact lenses. 4,285,738, Cl. 134-26.000.

Ohmure, Keiichi: *See—*
Yoshida, Mitsuo; Nakamura, Akira; Ohmure, Keiichi; and Ono, Atsuo, 4,285,798, Cl. 204-290.00F.

Ohno, Akira: *See—*
Sakai, Yoshihiro; Takahashi, Jun; Satoh, Toshiaki; and Ohno, Akira, 4,285,227, Cl. 72-240.000.

Ohta, Tokuya: *See—*
Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, 4,285,575, Cl. 350-357.000.

Ohtori, Toschimi: *See—*
Kawasaki, Masami; Ohtori, Toschimi; Sukigara, Kunisuke; and Satoh, Mitsuo, 4,285,161, Cl. 47-9.000.

Ohya, Yukio: *See—*
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Oka, Yuichi; and Takiguchi, Yosimitsu, to Hitachi, Ltd. Logical circuit having bypass circuit. 4,286,173, Cl. 307-440.000.

Okada, Hiroaki; Sonoda, Takefumi; and Shoji, Osamu, to Toyo Soda Manufacturing Co., Ltd. Water dropping type irrigation pipe. 4,285,472, Cl. 239-542.000.

Okahisa, Mitsugu: *See—*
Murakami, Kaoru; Okahisa, Mitsugu; Arita, Tomohiko; and Kumano, Hiroshi, 4,286,029, Cl. 429-219.000.

Okubo, Tsuneo; Hamamoto, Nobuo; and Ichino, Kazuo, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Public Corporation. Method of detecting a mark by an electron beam and an apparatus therefor. 4,286,154, Cl. 250-307.000.

Olin Corporation: *See—*
Doerr, Richard L.; and Scardera, Michael, 4,285,695, Cl. 8-650.000.
Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., 4,285,387, Cl. 164-603.000.
Specht, Steven J.; and Kircher, Morton S., 4,285,793, Cl. 204-253.000.

Olivenbaum, James E.; and Illgen, Fritz, to Motorola Inc. Apparatus for mounting a reed switch. 4,286,241, Cl. 335-151.000.

Oliver, John S.: *See—*
French, George R.; and Oliver, John S., 4,286,208, Cl. 324-61.00R.

Oliveri, Anthony; and Macrina, Anthony. Method and apparatus involving adhesive backed photographs. 4,285,999, Cl. 428-40.000.

Olson, George P.: *See—*
Clancy, Douglas E.; Frankeny, Richard F.; and Olson, George P., 4,286,202, Cl. 318-696.000.

Olszewski, Edward J.; Hundrieser, Dieter H.; and Ostapovitch, Harold J., to Northern Telecom Limited. Telephone line cutover apparatus and switch. 4,286,121, Cl. 179-98.000.

Olympus Optical Company Limited: *See—*
Osanai, Akira; and Nakao, Toshihisa, 4,286,300, Cl. 360-130.320.
Suzuki, Yoshiro, 4,285,297, Cl. 118-657.000.
Yamashita, Nobuo; and Maeda, Miwako, 4,285,578, Cl. 350-410.000.

Omnichem Societe Anonyme: *See—*
Hannart, Jean A. A. J., 4,285,949, Cl. 424-256.000.

Ongchin, Lucio, to Union Carbide Corporation. Article of manufacture, the cross-linked product of a semi-conductive composition bonded to a crosslinked polyolefin substrate. 4,286,023, Cl. 428-516.000.

Onishi, Tetsuo. Combined chair and bed. 4,285,541, Cl. 297-84.000.

Onizawa, Masao, to Sanyo Trading Co., Inc. Curable composition. 4,286,079, Cl. 525-346.000.

Ono, Atsuo: *See—*
Yoshida, Mitsuo; Nakamura, Akira; Ohmure, Keiichi; and Ono, Atsuo, 4,285,798, Cl. 204-290.00F.

Ono, Yoshihiro: *See—*
Nahara, Akira; Ono, Yoshihiro; Namiki, Tomizo; Harada, Shigeo; Mizobuchi, Yuzo; and Ikeda, Tomoaki, 4,286,045, Cl. 430-270.000.

Opitz, Wolfgang: *See—*
Etschenberg, Eugen; Jacobi, Haireddin; and Opitz, Wolfgang, 4,285,935, Cl. 424-177.000.

Oppermann, Robert A.: *See—*
Messing, Ralph A.; Oppermann, Robert A.; Simpson, Lynn B.; and Takeguchi, Milton M., 4,286,061, Cl. 435-176.000.

Orega Electronique et Mecanique: *See—*
Petit, Julien, 4,286,129, Cl. 200-159.00B.

Organisation Europeenne de Recherches Spatiales: *See—*
Robinson, Alan A., 4,285,553, Cl. 308-10.000.

O'Rourke, Thomas J.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.

Orth, George O., Jr. Method of recovering residual vegetable oil contained in spent bleaching clay and processing the bleaching clay for reuse. 4,285,832, Cl. 252-424.000.

Orthomedics, Inc.: *See—*
Oebser, Alfred L.; and Porter, David L., 4,285,336, Cl. 128-78.000.

Orttmann, Harry: *See—*
Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Orttmann, Harry, 4,285,692, Cl. 8-499.000.

Osaka City: *See—*
Yotsutsuji, Akira; Ueda, Seiichi; and Uemura, Kiyoshi, 4,285,661, Cl. 425-563.000.

Osanai, Akira; and Nakao, Toshihisa, to Olympus Optical Company Limited. Tape cassette. 4,286,300, Cl. 360-130.320.

Osborg, Hans. Process for preparing hydrazines. 4,286,108, Cl. 564-464.000.

Oshima, Mitsuru: *See—*
Mizutani, Yutaka; Miwa, Yoshiharu; and Oshima, Mitsuru, 4,285,890, Cl. 264-1.100.

Ostapovitch, Harold J.: *See—*
Olszewski, Edward J.; Hundrieser, Dieter H.; and Ostapovitch, Harold J., 4,286,121, Cl. 179-98.000.

Ostbo, John D. B. Heat-exchangers with plate-like heat exchange elements. 4,285,397, Cl. 165-163.000.

Osterreichische Hiag-Werke Aktiengesellschaft: *See—*
Mayerhoffer, Herbert, 4,285,843, Cl. 260-17.300.

Ostertag, Karl: *See—*
Hoppe, Hans-Joachim; and Ostertag, Karl, 4,285,898, Cl. 264-176.00F.

Ostwald, Fritz, to ITT Industries, Inc. Floating caliper disc brake. 4,285,417, Cl. 188-73.300.

Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Company, Incorporated. Undercarriage for adverse terrain vehicle. 4,285,627, Cl. 414-695.500.

Ott, Granville E., to Texas Instruments Incorporated. Digital computing system having auto-incrementing memory. 4,286,320, Cl. 364-200.000.

Ottesen, Robert B.; and Morris, Gerald L., to United States of America, Army. Touch screen target designator. 4,286,289, Cl. 358-125.000.

Otto, Susan E.; and Dunmire, David L., to Peanut Research & Testing Laboratories, Inc. Analysis of aflatoxins in peanuts by high pressure liquid chromatograph. 4,285,698, Cl. 23-230.00B.

Overholser, Loyal M.: *See—*
McCoy, French T.; Steinbrunner, Thomas A.; McEvers, Dale L.; and Overholser, Loyal M., 4,285,536, Cl. 292-336.300.

Owens-Corning Fiberglas Corporation: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,285,734, Cl. 106-273.00R.

Owens-Corning Fiberglass Corporation: *See—*
Thompson, Thomas K., 4,285,712, Cl. 65-2.000.

Owens-Illinois, Inc.: *See—*
Babcock, Clarence L.; Busdiecker, Robert A.; and Hagedorn, Erwin C., 4,285,728, Cl. 106-39.700.
DeMartino, Edward A., 4,285,750, Cl. 156-218.000.

Mathias, Richard G.; Novak, John D.; Rough, Robert R., Sr.; Small, Owen M.; and Willinger, Sigmund, 4,285,718, Cl. 65-134.000.
Novak, John D., 4,285,717, Cl. 65-134.000.

Owens, Michael; Waldroup, Roy W.; and Halper, Warren, to General Electric Company. Electrical capacitor protective arrangement. 4,286,302, Cl. 361-15.000.

Oxendahl, Terrence L.; and Davidson, Allen E. Construction line reel. 4,285,477, Cl. 242-96.000.

Oxon Italia S.p.A.: *See*—
Motta, Raimondo, 4,286,092, Cl. 544-241.000.

Oy Mercantile AB: *See*—
Leskinen, Seppo J.; and Pukkila, Olli J., 4,285,635, Cl. 416-185.000.

P C U K Produits Chimiques Ugine Kuhlmann: *See*—
Kremer, Gilbert V. H.; Pechmeze, Jacques P. E.; and Sureau, Robert F. M., 4,285,696, Cl. 8-654.000.

Pacciarini, Antonio: *See*—
Manini, Silvio; and Pacciarini, Antonio, 4,285,630, Cl. 414-786.000.

Pace, Wilson D.: *See*—
Jarrett, Robert B.; and Pace, Wilson D., 4,286,176, Cl. 307-261.000.

Pacesetter Management Corp.: *See*—
Weiss, Gary A., 4,286,112, Cl. 178-23.00R.

Paetsch, Werner, to Siemens Aktiengesellschaft. FM data demodulator including circuit for eliminating step distortion. 4,286,224, Cl. 329-107.000.

Page, Robert E., to Beloit Corporation. Headbox having adjustable flow passages. 4,285,767, Cl. 162-216.000.

Paine, John C., to Towmotor Corporation. Friction coupling control system. 4,285,418, Cl. 188-109.000.

Paitson, John L. Acoustic impulse generator. 4,285,415, Cl. 181-120.000.

Paladino, Angelo; and Campolo, Arnold, Jr., to Palco Industries, Inc. Storage tray for packaged articles. 4,285,557, Cl. 312-246.000.

Palco Industries, Inc.: *See*—
Paladino, Angelo; and Campolo, Arnold, Jr., 4,285,557, Cl. 312-246.000.

Palla, Ottorino: *See*—
Galli, Remo; Gozzo, Franco; Palla, Ottorino; and Longoni, Angelo, 4,285,969, Cl. 424-304.000.

Pallet Service Corporation: *See*—
Fagre, Raymond C., Jr., 4,285,110, Cl. 29-252.000.

Palmer, John P., to General Dynamics, Pomona Division. Fiber optic bar code reader. 4,286,145, Cl. 235-454.000.

Pampus, Gottfried: *See*—
Beck, Manfred; and Pampus, Gottfried, 4,285,833, Cl. 252-428.000.

Paper Converting Machine Company: *See*—
Spencer, Harvey J., 4,285,621, Cl. 414-45.000.

Papetti, Stelvio: *See*—
Millington, James E.; and Papetti, Stelvio, 4,286,069, Cl. 521-56.000.

Parker, Dane K., to Goodyear Tire & Rubber Company, The. Process for the preparation of antioxidant amides. 4,286,105, Cl. 564-205.000.

Parker, DeRay: *See*—
Jones, Donald E.; Parker, DeRay; and Boren, Paul R., 4,286,165, Cl. 250-484.000.

Parker-Hannifin Corporation: *See*—
Misiura, Thaddeus D.; and Lambert, Gordon K., 4,285,369, Cl. 138-149.000.
Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., 4,285,639, Cl. 417-218.000.

Parker, Ralph, to Harris Corporation. Cassette loading system and self-threading cassette for use therewith. 4,285,480, Cl. 242-195.000.

Parry, Keith P.: *See*—
Worthington, Paul A.; and Parry, Keith P., 4,285,722, Cl. 71-92.000.

Parsons, J. Howard, to Hughes Aircraft Company. Method for fabricating thin panel illuminator. 4,285,889, Cl. 264-2.600.

Passarotti, Carlo: *See*—
Gandolfi, Carmelo; Passarotti, Carlo; Andreoni, Alessandro; Fumagalli, Angelo; Faustini, Franco; and Cesarani, Roberto, 4,285,966, Cl. 424-285.000.

Passavant-Werke Michelbacher Huette: *See*—
Muskat, Josef, 4,285,818, Cl. 210-614.000.

Passler, Helmar: *See*—
Glukhikh, Vasily A.; Sviniin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.

Pastorino, Ronald L.; and Lewis, Roger N., to Argus Chemical Corporation. Cyclic perketals and their use for cross-linking high density polyethylene. 4,285,866, Cl. 260-338.000.

Patten, Thomas E.: *See*—
Allen, Richard B.; and Patten, Thomas E., 4,285,759, Cl. 156-584.000.

Paulsen, Gunther. Quick stranding machine. 4,285,191, Cl. 57-58.340.

Pauluzzi, Ego: *See*—
Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, 4,285,645, Cl. 425-6.000.

Pavelek, Joseph M., Jr.: *See*—
Bertozzi, Richard J.; Pavelek, Joseph M., Jr.; and Wood, Daniel S., 4,285,826, Cl. 252-117.000.

Pavlova, Tamara A.: *See*—
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.

Pavone, Robert J.: *See*—
Logan, David J.; and Pavone, Robert J., 4,285,258, Cl. 83-410.000.

Pávy, Michel; and Casaert, Rene, to Nortene. Method and apparatus for making helical plastic members, and the members produced. 4,285,899, Cl. 264-180.000.

Peanut Research & Testing Laboratories, Inc.: *See*—
Otto, Susan E.; and Dunmire, David L., 4,285,698, Cl. 23-230.00B.

Pearce, Roy W. J.; Carbert, John; and MacDonald, John P. K., to Johnson, Matthey & Co., Limited. Process for production of free flowing dust-free pigments. 4,285,994, Cl. 427-222.000.

Pearo, John M. Basketball goal. 4,285,518, Cl. 273-1.50R.

Pechmeze, Jacques P. E.: *See*—
Kremer, Gilbert V. H.; Pechmeze, Jacques P. E.; and Sureau, Robert F. M., 4,285,696, Cl. 8-654.000.

Pelsue, Bradley A.; and Beavers, Allan E., to T. A. Pelsue Company. Portable ventilating apparatus for purging underground installations and the like. 4,285,269, Cl. 98-33.00R.

Peltzer & Ehlers GmbH & Co.: *See*—
Flamme, Walter; and Mielke, Willi, 4,285,453, Cl. 226-142.000.

Pepe, Robert D. Pressurized gas seal for furnace atmosphere containment. 4,285,668, Cl. 432-19.000.

Peppler, Michael S.; and Bakermans, Johannes C. W., to AMP Incorporated. Cable harness assembly and electrical testing machine. 4,285,118, Cl. 29-593.000.

PepsiCo Inc.: *See*—
Cahill, John W., 4,285,426, Cl. 194-4.00C.

Pera, John D.; and Johnson, Betty S., to Buckman Laboratories, Inc. Slime control compositions and methods of using the same. 4,285,765, Cl. 162-161.000.

Perez, Michael A. Toilet paper dispenser with biasing means for restraining the unwinding of the paper. 4,285,474, Cl. 242-55.200.

Permclip Products Corporation: *See*—
Corey, Joseph T.; and Corey, Thomas J., 4,285,104, Cl. 24-153.000.

Persson, Torsten H. Arrangement in a gate. 4,285,165, Cl. 49-30.000.

Peterson, David: *See*—
Halle, Reidar; Peterson, David; Fisch, Michael A.; and Liauw, Koei-Liang, 4,285,877, Cl. 260-453.0RZ.

Peterson, Harold S.: *See*—
Brady, Joseph M.; and Peterson, Harold S., 4,285,084, Cl. 10-73.000.

Petit, Julien, to Orega Electronique et Mecanique. Keyboard having sudden trip tactile effect keys. 4,286,129, Cl. 200-159.00B.

Petocz, Lujza: *See*—
Budai, Zoltan; Lay nee Konya, Aranka; Mezei, Tibor; Grasser, Katalin; Petocz, Lujza; Kiszelly, Eniko; and Kosoczky, Ibolya, 4,285,942, Cl. 424-248.560.

Pfabe, Siegfried: *See*—
Dahmen, Kurt; and Pfabe, Siegfried, 4,286,004, Cl. 428-95.000.

Pfaff Industriemaschinen GmbH: *See*—
Bolldorf, Kurt; and Schmidt, Gottfried, 4,285,289, Cl. 112-98.000.

Pfeiffer, Francis R., to SmithKline Corporation. 7,8-Dihydroxy-1-(sulfamylphenyl)-2,3,4,5-tetrahydro-1H-3-benzazepine derivatives. 4,285,938, Cl. 424-244.000.

Pfenninger, Hans, to BBC Brown, Boveri & Company Limited. Dust separator for separating dust from flowing gaseous media. 4,285,707, Cl. 55-396.000.

Pfizer Inc.: *See*—
Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,285,867, Cl. 260-338.000.
Sarges, Reinhard, 4,286,098, Cl. 548-309.000.

Pham Van, Doan, to Delle-Alsthom. H.V. current cut-out circuit. 4,286,301, Cl. 361-3.000.

Phelon, Russell D.; and Burson, Bob O., to R. E. Phelon Company, Inc. Capacitor discharge ignition system. 4,285,321, Cl. 123-599.000.

Phillips Petroleum Co.: *See*—
Chapman, Charles C., 4,286,110, Cl. 585-719.000.
Cheng, Paul J.; and Mills, King L., 4,285,926, Cl. 423-450.000.
Nash, Martin E.; and Huxley, Edward E., 4,286,099, Cl. 549-87.000.
Politte, Leo L.; and Washer, Stone P., 4,285,708, Cl. 62-28.000.
Stegelman, Albert F., 4,285,805, Cl. 208-113.000.

Phillips, Wheeler E.: *See*—
Inman, Billy E.; and Phillips, Wheeler E., 4,285,288, Cl. 112-79.00R.

Pier, Gerald B.; and Sadoff, Jerald C., to United States of America, Army. Method for producing a vaccine against bacterial infections caused by *pseudomonas aeruginosa*. 4,285,936, Cl. 424-180.000.

Pierce, Chester J., Jr.: *See*—
Collura, Peter C.; and Pierce, Chester J., Jr., 4,285,185, Cl. 53-48.000.

Piestert, Gerhardt; and Gilch, Heinz G., to USM Corporation. Adhesive composition and method. 4,285,755, Cl. 156-294.000.

Pilat, Eugene R.; Franks, George J., Jr.; and Dyben, Jerry F. Electronic security device and method. 4,286,305, Cl. 361-172.000.

Pinsler, Heinz W.: *See*—
Neyhart, James H.; Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,286,033, Cl. 430-58.000.

Pioneer Electronic Corporation: *See*—
Suzuki, Tsutomu, 4,286,281, Cl. 358-4.000.

Pismannik, Konstantin D.: *See*—
Glukhikh, Vasily A.; Sviniin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.

Pitches, Brian E.: *See—*
Sligh, Alistair D. M.; and Pitches, Brian E., 4,286,252, Cl. 340-27.0SS.

Pitney Bowes Inc.: *See—*
Dlugos, Daniel F.; Hansen, Gary G.; and Steinmetz, John H., 4,286,325, Cl. 364-466.000.
Jurkowski, Walter J., 4,285,090, Cl. 15-256.510.
Pollak, Philip, Jr.; Schubert, Keith E.; and Lorenzo, John L., 4,286,144, Cl. 235-101.000.

Pittman, Edgar H.: *See—*
Higgins, Kenneth B.; and Pittman, Edgar H., 4,286,003, Cl. 428-95.000.

Planche, Jean; Tromelin, Jacques; and Vannier, Daniel, to Schlumberger Technology Corporation. Device for electrode-type electrical logging tools and tool incorporating said device. 4,286,217, Cl. 324-347.000.

Plessey Handel und Investments AG: *See—*
Taylor, Peter J., 4,285,631, Cl. 415-143.000.

Plumettaz, Gerard, to Plumettaz, S.A. Cable conveyor. 4,285,454, Cl. 226-174.000.

Plumettaz, S.A.: *See—*
Plumettaz, Gerard, 4,285,454, Cl. 226-174.000.

Pohl, Ludwig: *See—*
Eidenschink, Rudolf; Pohl, Ludwig; Weber, Georg; and Del Pino, Fernando, 4,285,829, Cl. 252-299.630.

Poland, Cedric M. Explosive fire extinguisher. 4,285,403, Cl. 169-28.000.

Polaroid Corporation: *See—*
Canter, Joseph M., 4,285,583, Cl. 354-23.00D.
Canter, Joseph M., 4,285,584, Cl. 354-31.000.
Schuler, Norman W., 4,285,577, Cl. 350-403.000.
Stella, Joseph A., 4,285,581, Cl. 352-130.000.
Van Allen, David; and Finnemore, Fred M., 4,285,589, Cl. 354-145.000.
Wolff, Otto E., 4,286,308, Cl. 362-19.000.

Policarpo, Armando: *See—*
Charpak, Georges; Ngoc, Hoan N.; and Policarpo, Armando, 4,286,158, Cl. 250-374.000.

Politte, Leo L.; and Washer, Stone P., to Phillips Petroleum Co. Dethanizing means. 4,285,708, Cl. 62-28.000.

Pollack, Charles N. Extracorporeal cannula apparatus with retractable intralumenal balloon and method for using same. 4,285,341, Cl. 128-214.00R.

Pollak, Philip, Jr.; Schubert, Keith E.; and Lorenzo, John L., to Pitney Bowes Inc. Encoder for postage meter. 4,286,144, Cl. 235-101.000.

Polylok Corporation: *See—*
Duhl, Daniel, 4,285,216, Cl. 66-192.000.

Polymer Corporation, The: *See—*
Scheetz, Howard A., 4,285,168, Cl. 51-281.00R.

Poncha, Rustom P., to Allied Chemical Corporation. Process for the conversion of light ash to absorptive low bulk density alkali products. 4,285,925, Cl. 423-425.000.

Porter, David L.: *See—*
Oebser, Alfred L.; and Porter, David L., 4,285,336, Cl. 128-78.000.

Powell, Carl G.: *See—*
Goertzel, Gerald; Powell, Carl G.; and Tseng, Samuel C., 4,286,329, Cl. 364-900.000.

Power, Roy J. Inner sole for foot wear. 4,285,144, Cl. 36-44.000.

Powers, Larry J.: *See—*
Bimber, Russell M.; Buchman, Russell; DePompei, Michael F.; and Powers, Larry J., 4,286,091, Cl. 544-239.000.

Poyarkov, Igor B.: *See—*
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

PPG Industries, Inc.: *See—*
Dowbenko, Rostyslaw; Schimmel, Karl F.; and Seiner, Jerome A., 4,285,849, Cl. 260-29.6NR.
Ernsberger, Fred M., 4,285,988, Cl. 427-12.000.
Ernsberger, Fred M., 4,286,052, Cl. 430-330.000.
Fahey, Dennis M., 4,286,019, Cl. 428-391.000.
Farabaugh, Aloysius W., 4,285,745, Cl. 156-64.000.
Ferraino, Peter R., 4,285,451, Cl. 225-2.000.
Frank, Robert G., 4,285,715, Cl. 65-106.000.

Prada, Luis E., to General Electric Company. Ice dispenser storage assembly. 4,285,212, Cl. 62-344.000.

Prakla-Seismos GmbH: *See—*
Edelmann, Hans A. K., 4,286,332, Cl. 367-75.000.

Pratt, Michael W. T., to National Research Development Corp. Separation of acids. 4,285,924, Cl. 423-390.000.

Precision Dynamics Corporation: *See—*
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., 4,285,146, Cl. 40-21.00C.

Precision Machine Products, Inc.: *See—*
Kennedy, Lyn R., 4,285,245, Cl. 73-861.000.

Pretty Products, Inc.: *See—*
Bell, Ted A.; and Cooksey, Timothy S., 4,285,554, Cl. 312-9.000.

Preway Inc.: *See—*
Moss, Robert G., 4,285,326, Cl. 126-121.000.

Price, George W. E. Device for recumbency of the head and neck. 4,285,081, Cl. 5-434.000.

Price, John G. Method of cleaning railroad track. 4,285,737, Cl. 134-6.000.

Prochazka, Svante: *See—*
Charles, Richard J.; Prochazka, Svante; and Scott, Curtis E., 4,285,732, Cl. 106-57.000.

Procter & Gamble Company, The: *See—*
Barrat, Christian R.; Wevers, Jean; and Koster, Robertus J. C., 4,285,841, Cl. 252-559.000.

Propst, Paul L.: *See—*
Propst, Robert L.; and Propst, Paul L., 4,285,624, Cl. 414-362.000.

Propst, Robert L.; and Propst, Paul L., to Herman Miller, Inc. Trash collection and management system for an office environment. 4,285,624, Cl. 414-362.000.

Protze, Dieter, to Volkswagenwerk Aktiengesellschaft. Automobile passenger seat with an automatically positioned headrest. 4,285,545, Cl. 297-483.000.

Prucher, Helmut; Uhl, Jurgen; Kurmeier, Hans-Adolf; Rudolph, Volkmar; and Wahlig, Helmut, to Merck Patent Gesellschaft mit beschrankter Haftung. Basic thioethers. 4,285,961, Cl. 424-273.00R.

Puech, Claude; Leclerc, Pierre; de Cremoux, Baudouin; Hirtz, Pierre; and Di Forte, Marie A., to Thomson-CSF. Laser with distributed reflector. 4,286,232, Cl. 331-94.50H.

Pugh, Ralph A.; and Ford, Kenneth L., to Jersey Nuclear-Avco Isotopes, Inc. Collection shield for ion separation apparatus. 4,286,152, Cl. 250-281.000.

Pukkila, Olli J.: *See—*
Leskinen, Seppo J.; and Pukkila, Olli J., 4,285,635, Cl. 416-185.000.

Pulp and Paper Research Institute of Canada: *See—*
Garner, Andrew, 4,285,232, Cl. 73-86.000.
Garner, Andrew; and Laliberte, Laurent H., 4,285,787, Cl. 204-147.000.

Pyles, Gerald D.; Wilber, James A.; and Christopher, Todd J., to RCA Corporation. Fast recovery squelch circuit for a video disc player. 4,286,290, Cl. 358-128.500.

Quigley, Robert E., to American Seating Company. Power drive apparatus for telescopic seating system. 4,285,172, Cl. 52-10.000.

Quinlivan, Sharon L. Method for decorating baked goods and the like. 4,285,978, Cl. 426-87.000.

Quinn, Van A.: *See—*
Membrino, Robert J.; Some, Raphael R.; and Quinn, Van A., 4,286,319, Cl. 364-200.000.

Quiogue, Honesto D., to Harvey Hubbell Incorporated. Balanced industrial luminaire. 4,286,313, Cl. 362-370.000.

Quiring, Bernd; Wenzel, Wolfgang; Niederdellmann, Georg; Wagner, Hans; and Goyert, Wilhelm, to Bayer Aktiengesellschaft. Extrusion process for the preparation of polyurethane ureas. 4,286,080, Cl. 525-455.000.

Quitoschinger, Willi. Pressure medium actuated switch. 4,286,127, Cl. 200-83.00J.

R. E. Phelon Company, Inc.: *See—*
Phelon, Russell D.; and Burson, Bob O., 4,285,321, Cl. 123-599.000.

R.J. Hamer Limited: *See—*
Wyatt, Sidney G., 4,285,827, Cl. 252-165.000.

Rabotkin, Jury I.: *See—*
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Racionalizacni a experimentalni laborator: *See—*
Kolar, Karel, 4,285,147, Cl. 40-109.000.
Kolar, Karel, 4,285,148, Cl. 40-115.000.

Radd, Frederick J., to Conoco, Inc. Corrosion resistant tension leg cables. 4,285,615, Cl. 405-211.000.

Ragan, Marshall P., to FMC Corporation. Wheel clamp. 4,285,136, Cl. 33-203.180.

Ragland, Frank R., Jr., to RCA Corporation. Method for determining the average width of luminescent stripes of a viewing screen. 4,286,164, Cl. 250-461.00R.

Rahdener Maschinenfabrik August Kolbus: *See—*
Rathert, Horst; and Hedrich, Winfried, 4,285,292, Cl. 112-262.100.

Rajamannan, A. H. J., to Agrohol Systems, Inc. Microwave distillation. 4,285,774, Cl. 202-154.000.

Ralston Purina Company: *See—*
Betz, Norman L.; Lanter, Kent J.; and Williams, Danny L., 4,285,974, Cl. 426-2.000.

Randles, Arthur E. Carton blank feeding and glue applying apparatus. 4,285,680, Cl. 493-132.000.

Rannow, Robert L., to Thermocycle, Inc. Heating and cooling system. 4,285,392, Cl. 165-50.000.

Ransburg Corporation: *See—*
Rapp, John S.; and Jackson, David H., 4,285,446, Cl. 222-70.000.

Rao, G. R. Mohan; and White, Lionel S., Jr., to Texas Instruments Incorporated. Sense amplifier with dual parallel driver transistors in MOS random access memory. 4,286,178, Cl. 307-355.000.

Rapp, John S.; and Jackson, David H., to Ransburg Corporation. Automatic purging system having a pressure sensor and a timing mechanism. 4,285,446, Cl. 222-70.000.

Rasinski, Clarence. Detachable vehicle lighting fixture. 4,286,309, Cl. 362-61.000.

Rasmussen, Chris R., to McNeilab, Inc. N-Aryl-N'-(1,4,5,6-tetrahydropyrimidine-2-yl)ureas as antihypertensives. 4,285,948, Cl. 424-251.000.

Ratajczak, Hans-Josef: *See—*
Rigler, Josef K.; Ratajczak, Hans-Josef; Leithauser, Horst; and Trukenbrod, Karl, 4,286,071, Cl. 521-96.000.
Rathert, Horst; and Hedrich, Winfried, to Rahdener Maschinenfabrik August Kolbus. Method of thread stitching layers to form a sewn book. 4,285,292, Cl. 112-262.100.
Raytheon Company: *See—*
Green, Jerome J.; and Masse, Daniel J., 4,286,135, Cl. 219-10.55F.
RCA Corporation: *See—*
Christopher, Todd J.; and Wilber, James A., 4,286,282, Cl. 358-8.000.
Clemens, Jon K., 4,286,283, Cl. 358-11.000.
Dingwall, Andrew G. F., 4,286,174, Cl. 307-242.000.
Goldberg, Edwin A., 4,286,304, Cl. 361-149.000.
Hernqvist, Karl G., 4,285,990, Cl. 427-39.000.
Himics, Richard J.; Kaplan, Michael; and Desai, Nitin V., 4,286,050, Cl. 430-296.000.
Hughes, Larry M.; and George, Kenneth L., 4,285,524, Cl. 369-71.000.
James, Jack E., 4,286,237, Cl. 332-19.000.
Kucharewski, Nicholas; and Gillberg, James E., 4,286,233, Cl. 331-111.000.
Leidich, Arthur J., 4,286,226, Cl. 330-254.000.
Pyles, Gerald D.; Wilber, James A.; and Christopher, Todd J., 4,286,290, Cl. 358-128.500.
Ragland, Frank R., Jr., 4,286,164, Cl. 250-461.00R.
Rhodes, Roland N., 4,286,285, Cl. 358-44.000.
Sanford, Robert F., 4,286,336, Cl. 455-117.000.
Wilber, James A.; and Christopher, Todd J., 4,286,235, Cl. 331-116.00R.
Reavill, Roger E.: *See—*
Dimond, Harold L.; Odioso, Raymond C.; and Reavill, Roger E., 4,286,016, Cl. 428-311.000.
Reba, Imants; and Wolthausen, Edward C., to Crown Zellerbach Corporation. System and method for dispersing filaments. 4,285,452, Cl. 226-7.000.
Reber, Timothy M.: *See—*
Eberle, William J.; and Reber, Timothy M., 4,285,257, Cl. 83-167.000.
Redmann, Rainer: *See—*
Englemann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,286,054, Cl. 430-544.000.
Reed, Kenneth J.; and Lythgoe, Alan L., to E. T. Marler Limited. Dry release transfers. 4,286,008, Cl. 428-195.000.
Reed, Nanci W.: *See—*
Guimond, Roy A.; Reed, Nanci W.; and Gulliksen, John E., 4,285,121, Cl. 29-623.100.
Reeves, David L. R.: *See—*
Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Reeves, David L. R.; and Wood, Glenn P., 4,285,859, Cl. 260-152.000.
Rega, John F., to Johnson & Johnson Baby Products Company. Method for manufacturing a product having elastic means disposed in the transverse direction. 4,285,747, Cl. 156-164.000.
Reid, Laurie M., to Mead Corporation, The. Feeder mechanism. 4,285,509, Cl. 271-10.000.
Reinhard, Linda M.: *See—*
Genheimer, Stephen R.; Whitney, John A.; and Reinhard, Linda M., 4,286,303, Cl. 361-24.000.
Reliable Metal Products, Inc.: *See—*
Simmons, William B., Sr.; and Ellis, Derrick S., 4,285,335, Cl. 126-447.000.
Relyea, Lloyd A.: *See—*
Neyhart, James H.; Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,286,033, Cl. 430-58.000.
Rembaum, Alan: *See—*
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Remond, Georges: *See—*
Vincent, Michel; Remond, Georges; and Bure, Jacques, 4,285,943, Cl. 424-248.570.
Research Corporation: *See—*
Stoner, Glenn E.; and Cahen, George L., Jr., 4,285,796, Cl. 204-290.00R.
Research Products Corporation: *See—*
Fowler, Thomas P., 4,286,213, Cl. 324-127.000.
Resnick, Martin L.: *See—*
Anderson, Richard W.; Resnick, Martin L.; and Schlener, J. Edward, 4,286,331, Cl. 364-900.000.
Rex, Donald K., to International Business Machines Corporation. Ribbon shield for printer. 4,285,604, Cl. 400-247.000.
Rexnord Inc.: *See—*
Horton, Robert J., 4,285,808, Cl. 209-17.000.
Rhine, Samuel: *See—*
Butts, Gene A.; and Rhine, Samuel, 4,285,594, Cl. 356-72.000.
Rhodes, Roland N., to RCA Corporation. Checkerboard color filter providing tolerance. 4,286,285, Cl. 358-44.000.
Rhone-Poulenc Industries: *See—*
Mamourian, Armand; Bousquet, Francois; and Helgorsky, Jacques, 4,285,921, Cl. 423-321.00S.
Rialan, Joseph: *See—*
Douaud, Andre; and Rialan, Joseph, 4,285,315, Cl. 123-425.000.
Richardson-Merrell Inc.: *See—*
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., 4,285,957, Cl. 424-267.000.
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., 4,285,958, Cl. 424-267.000.
Richardson, William C.; and Isoldi, Mario, to Album Graphics, Incorporated. Display box. 4,285,150, Cl. 40-312.000.
Richey, Danny D.: *See—*
Suk Kang, Kenneth; Veeder, George T., III; and Richey, Danny D., 4,286,059, Cl. 435-101.000.
Richter Gedeon Vegyeszeti Gyar Rt: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,865, Cl. 260-239.30P.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,950, Cl. 424-256.000.
Richter, Sidney B., to Velsicol Chemical Corporation. Method of increasing the yields of sugar obtained from sugarcane. 4,285,721, Cl. 71-88.000.
Ricoh Company, Ltd.: *See—*
Horike, Masanori, 4,286,273, Cl. 346-75.000.
Kaneko, Tamaki, 4,285,508, Cl. 271-4.000.
Kanno, Tadaaki; and Koike, Tadao, 4,285,510, Cl. 271-127.000.
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Riddle, Neville L.: *See—*
Kitchen, John P.; and Riddle, Neville L., 4,285,080, Cl. 5-186.00R.
Ried, Louis, Jr. Ionization particle detector. 4,286,160, Cl. 250-381.000.
Riede, Peter M.: *See—*
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Riedel-de Haen Aktiengesellschaft: *See—*
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Rieger, Robert: *See—*
Kraus, Hermann; Kirchlechner, Peter; Rieger, Robert; and Schuck, Wolf-Dieter, 4,286,306, Cl. 361-242.000.
Rieper, Hermann, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Tacking rivet. 4,285,265, Cl. 411-501.000.
Rigler, Josef K.; Ratajczak, Hans-Josef; Leithauser, Horst; and Trukenbrod, Karl, to Chemische Werke Huls AG. Self-extinguishing fine particulate expandable styrene polymers. 4,286,071, Cl. 521-96.000.
Riker Laboratories, Inc.: *See—*
Galbraith, William, 4,286,064, Cl. 435-219.000.
Rikis, Vitolds: *See—*
Schiff, Otto M.; and Rikis, Vitolds, 4,285,587, Cl. 354-124.000.
Riley, Richard L.: *See—*
Chou, Billy J.; Yelnosky, John; and Riley, Richard L., 4,285,972, Cl. 424-326.000.
Rinkleib, Helfried O., to International Business Machines Corporation. Preloaded head arm assembly. 4,286,298, Cl. 360-109.000.
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David, Karl-Heinz; Nogaj, Alfred; and Rinkler, Heinrich, 4,286,076, Cl. 525-221.000.
Ripstein, Jorge V. Brush and process for its manufacture. 4,285,088, Cl. 15-193.000.
Rissanen, Jorma J.: *See—*
Langdon, Glen G., Jr.; and Rissanen, Jorma J., 4,286,256, Cl. 340-347.0DD.
Roba, Joseph: *See—*
Niebes, Paul; Vincze, Andras; Roba, Joseph; Lambelin, Georges; Matagne, Daniel; Hanon, Etienne; and Franz, Michel, 4,285,964, Cl. 424-283.000.
Robatel S.L.P.I.: *See—*
Buffet, Denis, 4,285,462, Cl. 233-20.00A.
Robert Bosch GmbH: *See—*
Binder, Georg, 4,286,187, Cl. 310-91.000.
Eblen, Ewald; Hofmann, Karl; and Kopse, Odon, 4,285,471, Cl. 239-533.400.
Hagenlocher, Walter; Hesse, Heinz; Kleebaur, Karl; Kugel, Christoph; and Sohnle, Rudiger, 4,286,186, Cl. 310-89.000.
Kiencke, Uwe; Jundt, Werner; and Seeger, Karl, 4,285,314, Cl. 123-422.000.
Leiber, Heinz, 4,285,199, Cl. 60-550.000.
Steinke, Leo, 4,285,307, Cl. 123-179.0BG.
Roberts, Jonathan W.: *See—*
Staley, Ronald W.; and Roberts, Jonathan W., 4,286,010, Cl. 428-215.000.
Roberts, Michael G.: *See—*
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Roberts, Stanley: *See—*
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Robertshaw Controls Company: *See—*
Bauer, Werner R., 4,286,243, Cl. 335-193.000.
Katchka, Jay R.; and Graham, Marvin M., 4,285,662, Cl. 431-53.000.
Robeson, Lloyd M.; and Skoler, George A., to Union Carbide Corporation. Polyarylate containing blends. 4,286,075, Cl. 525-68.000.
Robinson, Alan A., to Organisation Europeenne de Recherches Spatiales. Magnetic suspension momentum device. 4,285,553, Cl. 308-10.000.
Rockwell International Corporation: *See—*
Eshghy, Siavash, 4,285,112, Cl. 29-407.000.
Noar, Raymond; and Blache, Louis J., 4,285,248, Cl. 74-5.00F.
Yao, Shi-Kay; and Gudmundsen, Richard A., 4,285,569, Cl. 350-96.140.
Roecks, Carl C.; and Baker, Stuart C., to Amistar Corporation. Automatic part positioning system. 4,286,201, Cl. 318-640.000.

Roeder, George K. Rotary table and kelly guard. 4,285,215, Cl. 64-23.500.

Roessler, Peter: *See—*
Kabbe, Hans-Joachim; Frohberger, Paul-Ernst; and Roessler, Peter, 4,285,965, Cl. 424-283.000.

Rogers, John W. Mechanical feed-up of web material on a recoiler. 4,285,475, Cl. 242-56.200.

Rohm and Haas Company: *See—*
Brendley, William H., Jr., 4,286,021, Cl. 428-413.000.

Rokey, Galen J.: *See—*
Wenger, Lavon G.; Rokey, Galen J.; and Ben-Gera, Itamar, 4,286,058, Cl. 435-99.000.

Romeo, Richard F., to Excelsior Tool Corp. Reversible drive ratchet socket remover assembly. 4,285,254, Cl. 81-58.100.

Romero, Robert. Ramp device for practicing wheeled sports. 4,285,514, Cl. 272-3.000.

Romijn, Anthony H., to Hollandsche Beton Groep N.V. Device for accurate subaqueous measurements 4,285,237, Cl. 73-300.000.

Roos, Josef R.: *See—*
Deruyttere, Andre E. A.; Delaey, Lucas J. A. E.; Aernoudt, Etienne A. D.; and Roos, Josef R., 4,285,739, Cl. 148-11.50C.

Root, Ronald R.; Warner, Michael W.; and Watrous, Robert B., to International Business Machines Corporation. Suspension for flying magnetic head. 4,286,297, Cl. 360-103.000.

Rose, Wayne B., to Cutter Laboratories, Inc. Pesticidal concentrate with stabilizing agent. 4,285,968, Cl. 424-300.000.

Rosenberg, Arnold M.; and Caidis, James M., to W. R. Grace & Co. Corrosion inhibiting concrete composition. 4,285,733, Cl. 106-98.000.

Rosenstreich, Joseph: *See—*
Gubernick, Joseph; Rosenstreich, Joseph; and Clapp, Lois A., 4,285,967, Cl. 424-289.000.

Rosenthal, Robert D.; and Rosenthal, Scott B., to Trebor Industries, Inc. Apparatus for near infrared quantitative analysis. 4,286,327, Cl. 364-498.000.

Rosenthal, Scott B.: *See—*
Rosenthal, Robert D.; and Rosenthal, Scott B., 4,286,327, Cl. 364-498.000.

Ross, Daniel L. Camouflage headwear. 4,285,068, Cl. 2-202.000.

Rossem, Hendrik V., to Byk-Mallinckrodt CIL B.V. Screening device for a generator producing radio-isotopes. 4,286,169, Cl. 250-515.000.

Rossman, Axel; Hoffmuller, Wilhelm; and Kruger, Wolfgang, to Motoren-und Turbinen-Union Munchen GmbH. Composite ceramic gas turbine blade. 4,285,634, Cl. 416-97.00A.

Roth, David W., to 2500 Corporation, The. Self-contained headlamp washer system. 4,285,470, Cl. 239-284.00A.

Roth, Robert B., to Sandvik Coastal Inc. Arbor for mounting tools in a chuck. 4,285,167, Cl. 51-168.000.

Rothman, Robert L.: *See—*
Baladjanian, Gregor; and Rothman, Robert L., 4,285,459, Cl. 228-119.000.

Rotoplas Ltd.: *See—*
Braverman, Joseph, 4,285,902, Cl. 264-229.000.

Rough, Robert R., Sr.: *See—*
Mathias, Richard G.; Novak, John D.; Rough, Robert R., Sr.; Small, Owen M.; and Willinger, Sigmund, 4,285,718, Cl. 65-134.000.

Rowell, Ross F. Method of forming brassiere wires. 4,285,113, Cl. 29-413.000.

Rudolf, Emil; and Rudolf, Manfred. Process for the reproduction of oil paintings or similarly textured images. 4,285,744, Cl. 156-59.000.

Rudolf, Manfred: *See—*
Rudolf, Emil; and Rudolf, Manfred, 4,285,744, Cl. 156-59.000.

Rudolph, Volkmar: *See—*
Prucher, Helmut; Uhl, Jurgen; Kurmeier, Hans-Adolf; Rudolph, Volkmar; and Wahlig, Helmut, 4,285,961, Cl. 424-273.00R.

Ruf, Wolfgang: *See—*
Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, 4,285,455, Cl. 226-188.000.

Ruffieux, Stanislaus; and Schade, Ekkehard, to BBC Brown, Boveri & Company Ltd. Electric gas-switch. 4,286,128, Cl. 200-148.00R.

Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; De Win, Werner; and Weber, Jurgen, 4,285,875, Cl. 260-413.000.

Runkle, Paul S. Shelter truss. 4,285,176, Cl. 52-93.000.

Runyon, John F. Hinge joint assembly. 4,285,609, Cl. 403-172.000.

Rusch, Richard B. Structural members and assemblages. 4,285,610, Cl. 403-189.000.

Russell, Robert F., to Scott Bader Company Limited. Unsaturated polyester resins. 4,285,845, Cl. 260-28.00R.

Russo, Leonard: *See—*
Davis, Charles S., 4,285,532, Cl. 281-42.000.

Ruyter, Herman P.: *See—*
van Raam, Leopold; Ruyter, Herman P.; and van Breugel, Josefus W., 4,285,140, Cl. 34-15.000.

Ryder, Leonard B. Injection blow molding apparatus. 4,285,657, Cl. 425-525.000.

Rynne, George B. Zinc-nickel alloy electroplating bath. 4,285,802, Cl. 204-43.00Z.

Sacchetti, Peter J., to New England Instrument Company. Laser formed resistor elements. 4,286,250, Cl. 338-306.000.

Sadoff, Jerald C.: *See—*
Pier, Gerald B.; and Sadoff, Jerald C., 4,285,936, Cl. 424-180.000.

Sadou, Jean-Claude B., to Thomson-CSF. Device for the processing of voice signals. 4,286,116, Cl. 179-1.00P.

Saeki, Tatsushi: *See—*
Miyake, Tetsuya; Takeda, Kunihiko; Miyata, Naoki; Saeki, Tatsushi; and Seko, Maomi, 4,285,811, Cl. 568-422.000.

Safi-Societe des Accumulateurs Fixes et de Traction: *See—*
Belot, Pierre, 4,286,204, Cl. 320-31.000.

Sahnas, George. Carburetor for internal combustion engines. 4,285,888, Cl. 261-59.000.

St. Clair, David J.; and Ewins, Earle E., to Shell Oil Company. Weather resistant adhesive composition. 4,286,077, Cl. 525-232.000.

Saito, Isao: *See—*
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Ikuta, Hironori; and Kitoh, Kyosuke, 4,285,940, Cl. 424-246.000.
Machida, Yoshimasa; Saito, Isao; Nomoto, Seiichiro; Negi, Shigeto; Kanai, Takeo; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; and Nagasu, Takeshi, 4,285,941, Cl. 424-246.000.

Sakai, Nobuo; Hayashi, Hiroshi; Toriuchi, Masaharu; and Katoh, Kazunobu, to Fuji Photo Film Co., Ltd. Light reflecting layer for color diffusion transfer photographic system. 4,286,042, Cl. 430-216.000.

Sakai, Yoshihiro; Takahashi, Jun; Satoh, Toshiaki; and Ohno, Akira, to NHK Spring Co., Ltd. Edge roll assembly for manufacturing a taper leaf spring. 4,285,227, Cl. 72-240.000.

Sakata, Toshio: *See—*
Iwao, Soichi; Takiguchi, Shinji; and Sakata, Toshio, 4,285,295, Cl. 118-60.000.

Sakoe, Hiroaki, to Nippon Electric Co., Ltd. System for recognizing words continuously spoken according to a format. 4,286,115, Cl. 179-1.05D.

Salan, Antonio: *See—*
Cazzaro, Giorgio; Cavallaro, Antonino; Salan, Antonio; and Matera, Giancarlo, 4,285,900, Cl. 264-182.000.

Saldarini, Albert V.; and Doerig, Robert, to Norda, Incorporated. Fixing volatile flavoring agent in starch hydrolysate. 4,285,983, Cl. 426-534.000.

Saldick, Jerome; and Cohen, Bernard, to Intermountain Research and Development Corp. Recovery of alkali values from trona ore. 4,285,915, Cl. 423-206.00T.

Salje, Ernst; and Bartsch, Ulrich, to Salje, Ernst. Rotatable article, such as a tool provided with means for damping vibration. 4,285,260, Cl. 83-835.000.

Salvai, Nazzareno, to Beloit Corporation. Method and apparatus for producing corrugated combined board. 4,285,764, Cl. 162-132.000.

Samford, Travis L. Straight hole driller. 4,285,407, Cl. 175-323.000.

Samford, Travis L. Broach for incorporation in a drill string. 4,285,410, Cl. 175-394.000.

Sanders, James M.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.

Sandoz, Inc.: *See—*
Bennett, Gregory B., 4,285,944, Cl. 424-249.000.

Sandoz Ltd.: *See—*
Egli, Hermann; and Engeler, Emil, 4,285,691, Cl. 8-455.000.
Fricker, Rene, 4,285,840, Cl. 252-546.000.
Gerber, Hans, 4,285,996, Cl. 427-389.900.

Sandvik Coastal Inc.: *See—*
Roth, Robert B., 4,285,167, Cl. 51-168.000.

Sanford, Leon M.; and Tick, Paul A., to Corning Glass Works. Moldable glasses. 4,285,730, Cl. 106-47.00R.

Sanford, Robert F., to RCA Corporation. Automatic shutdown arrangement for stand-alone television modulator. 4,286,336, Cl. 455-117.000.

Sansome, Dennis H.: *See—*
Basily, Basily B.; Sansome, Dennis H.; and Jones, Gerald M., 4,285,234, Cl. 73-862.650.

Sanyo Electric Co., Ltd.: *See—*
Nakata, Takeshi; Watanabe, Takashi; and Harada, Kiyoshi, 4,286,134, Cl. 219-10.55B.

Sanyo Trading Co., Inc.: *See—*
Onizawa, Masao, 4,286,079, Cl. 525-346.000.

Sapronetti, Giuseppe. Hairbrush shield. 4,285,087, Cl. 15-159.00R.

Sarges, Reinhard, to Pfizer Inc. Process for the preparation of chiral hydantoins. 4,286,098, Cl. 548-309.000.

Sassenberg, Richard. Multidirectional photographic compound stage. 4,285,592, Cl. 355-53.000.

Sato, Hirotsugu: *See—*
Imamura, Saburo; Sugawara, Shungo; and Sato, Hirotsugu, 4,286,049, Cl. 430-296.000.

Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshdyama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, to Fujimi Kenmazai Kogyo Co., Ltd.; and Toyo Engineering Corporation. Catalyst for steam reforming of hydrocarbons. 4,285,837, Cl. 252-466.00J.

Sato, Tetsuo, to Hitachi, Ltd. Transistor amplifying circuit for preventing the operation of an amplifying transistor in the quasi-saturation region. 4,286,227, Cl. 330-255.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Printing platen for hand labeler, or the like. 4,285,275, Cl. 101-407.0BP.

Satoh, Mitsuo: *See—*
Kawasaki, Masami; Ohtori, Toschimi; Sukigara, Kunisuke; and Satoh, Mitsuo, 4,285,161, Cl. 47-9.000.

Satoh, Ryosuke: *See*—
Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, 4,286,053, Cl. 430-389.000.

Satoh, Toshiaki: *See*—
Sakai, Yoshihiro; Takahashi, Jun; Satoh, Toshiaki; and Ohno, Akira, 4,285,227, Cl. 72-240.000.

Saveliev, Alexandr I.; and Brezulova, Elizaveta A. Twisting member for ringless spinning apparatus. 4,285,192, Cl. 57-58.890.

Savin Corporation: *See*—
Landa, Benzion; Swidler, Ronald; and Gardiner, Kenneth W., 4,286,039, Cl. 430-119.000.

Sawa, Hiroshi: *See*—
Kitta, Hiroyuki; Aizawa, Shinichi; and Sawa, Hiroshi, 4,286,159, Cl. 250-381.000.

Sawyer, Craig D.: *See*—
Specker, Steven R.; Sawyer, Craig D.; Crowther, Russell L.; Gitnick, Bennett J.; Walters, Kenneth V.; Brown, Robert E.; and Fennern, Larry E., 4,285,769, Cl. 176-30.000.

Scardera, Michael: *See*—
Doerr, Richard L.; and Scardera, Michael, 4,285,695, Cl. 8-650.000.

Schachter, Herbert I. Method of making a multi-level circuit board. 4,285,780, Cl. 204-15.000.

Schade, Ekkehard: *See*—
Ruffieux, Stanislaus; and Schade, Ekkehard, 4,286,128, Cl. 200-148.00R.

Schaffeler, Alois; and Stratmann, Uwe, to J & J Marquardt. Electric switch with two switching parts acting at different times. 4,286,125, Cl. 200-6.00B.

Schalk, Karl: *See*—
Kogler, Georg; Kuhnlein, Hans; and Schalk, Karl, 4,286,184, Cl. 310-67.00R.

Scharfe, Merlin E.: *See*—
Neyhart, James H.; Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,286,033, Cl. 430-58.000.

Scheetz, Howard A., to Polymer Corporation, The. Fiber lubricated bearings. 4,285,168, Cl. 51-281.00R.

Schegolev, Alexandr I.: *See*—
Glukhikh, Vasily A.; Sviniin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.

Scher, Herbert B., to Stauffer Chemical Company. Encapsulation process and capsules produced thereby. 4,285,720, Cl. 71-88.000.

Schering AG: *See*—
Gedrat, Klaus; Ehrich, Hans-Jurgen; Mahlkow, Hartmut; and Wolff, Joachim, 4,285,991, Cl. 427-97.000.

Schetina, Otto: *See*—
Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, 4,285,549, Cl. 299-75.000.

Scheuermann, Horst: *See*—
Hansen, Guenter; Kolbinger, Hans J.; Scheuermann, Horst; and Zeidler, Georg, 4,285,860, Cl. 260-152.000.

Schiel, Christian, to J. M. Voith GmbH. Apparatus for dewatering fiber suspension for producing a web of fiber. 4,285,768, Cl. 162-301.000.

Schiff, Otto M.; and Rikis, Vitolds, to Schiff Photo Mechanics. Compact multiple image camera. 4,285,587, Cl. 354-124.000.

Schiff Photo Mechanics: *See*—
Schiff, Otto M.; and Rikis, Vitolds, 4,285,587, Cl. 354-124.000.

Schimmel, Karl F.: *See*—
Dowbenko, Rostyslaw; Schimmel, Karl F.; and Seiner, Jerome A., 4,285,849, Cl. 260-29.6NR.

Schimmelman, Arthur H.: *See*—
Charles, Stanley E.; Long, Donald A.; and Schimmelman, Arthur H., 4,285,146, Cl. 40-21.00C.

Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Orttmann, Harry, to Bayer Aktiengesellschaft. Granular preparation of vat dyestuffs and/or disperse dyestuffs. 4,285,692, Cl. 8-499.000.

Schjeldahl, Gilmore T. Intermittent feed mechanism for stacked containers. 4,285,187, Cl. 53-282.000.

Schlegel (UK) Ltd.: *See*—
Hinton, Kevin; and Barnes, Martin S., 4,285,180, Cl. 52-396.000.

Schlener, J. Edward: *See*—
Anderson, Richard W.; Resnick, Martin L.; and Schlener, J. Edward, 4,286,331, Cl. 364-900.000.

Schlenker, Ralph F. Method for separating isotopes using a vortex tube. 4,285,701, Cl. 55-17.000.

Schleswiger Tauwerkfabrik Christian Oellerking: *See*—
Oellerking, Willi, 4,286,007, Cl. 428-194.000.

Schlumberger Technology Corporation: *See*—
Planche, Jean; Tromelin, Jacques; and Vannier, Daniel, 4,286,217, Cl. 324-347.000.

Schmand, Horst: *See*—
Dannenberg, Wolfgang; and Schmand, Horst, 4,285,884, Cl. 260-501.110.

Schmanski, Thomas G. Shingle locating gauge. 4,285,134, Cl. 33-188.000.

Schmidt, Gottfried: *See*—
Bolldorf, Kurt; and Schmidt, Gottfried, 4,285,289, Cl. 112-98.000.

Schmidt, Guenther, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Receiver for solar power stations. 4,285,667, Cl. 126-438.000.

Schmidt-Rabenau, Hartmut; and Berger, Hans-Werner, to Eppendorf Geratebau Netherler + Hinz GmbH. Electrode system. 4,285,791, Cl. 204-195.00M.

Schmidt, Sheldon P.: *See*—
Stewart, James B.; Woltmann, Klaus W.; Faris, Edwin E.; and Schmidt, Sheldon P., 4,285,813, Cl. 210-169.000.

Schmitz, Hans, to Vorwerk & Co. Interholding GmbH. Bottom plate for a carpet power cleaner. 4,285,092, Cl. 15-378.000.

Schneider, Erich, to Kombi-Lift Montage- und Handelsgesellschaft mbH. Apparatus for retaining guide pulleys for load cables of a building front cable lift in a housing stationarily arranged at the top of a building. 4,285,501, Cl. 254-394.000.

Schnell, John W.; and Haenel, Max K., to Benchmark Tool Company. Spool feed mechanism for line fed grass trimmer. 4,285,128, Cl. 30-276.000.

Scholes, Addison B., to Ball Corporation. Lubricating apparatus. 4,285,296, Cl. 118-630.000.

Scholz, D. Thomas. Tremolo device. 4,285,262, Cl. 84-313.000.

Schreiber, Bruno, to Ciba-Geigy Corporation. Crack-resistant epoxy resin molding composition with wollastonite. 4,285,853, Cl. 260-37.0EP.

Schreiber, William L.: *See*—
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.

Schreyer, Karlheinz; and Thilo, Peer, to Siemens Aktiengesellschaft. Danger alarm system. 4,286,117, Cl. 179-5.00R.

Schubert, Keith E.: *See*—
Pollak, Philip, Jr.; Schubert, Keith E.; and Lorenzo, John L., 4,286,144, Cl. 235-101.000.

Schuck, Wolf-Dieter: *See*—
Kraus, Hermann; Kirchlechner, Peter; Rieger, Robert; and Schuck, Wolf-Dieter, 4,286,306, Cl. 361-242.000.

Schuessler, John C.; and Tapp, David J., to Leach Corporation. Electromagnetic actuator for a latch relay. 4,286,244, Cl. 335-230.000.

Schuler, Norman W., to Polaroid Corporation. Window system comprising light polarizers. 4,285,577, Cl. 350-403.000.

Schulze, Jurgen: *See*—
Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Orttmann, Harry, 4,285,692, Cl. 8-499.000.

Schulze, Peter: *See*—
Schiwy, Willy; Schulze, Jurgen; Hummes, Ferdinand; Schulze, Peter; Hornle, Reinhold; Molls, Hans-Heinz; and Orttmann, Harry, 4,285,692, Cl. 8-499.000.

Schuricht, Henry A., to AMSTED Industries Incorporated. Walking-beam conveyor with adjustable width gauging aperture. 4,285,434, Cl. 209-625.000.

Schuster, Eberhard: *See*—
Janner, Karl; Gregorius, Klaus; and Schuster, Eberhard, 4,286,153, Cl. 250-281.000.

Schwab Safe Co., Inc.: *See*—
Miller, Norman, 4,285,560, Cl. 312-331.000.

Schwarz, Eckhard C. A., to Biax Fiberfilm Corporation. Apparatus for stretching a non-woven web or an orientable polymeric material. 4,285,100, Cl. 19-161.100.

Schweitzer Industrial Corporation: *See*—
Donahue, Joseph D., 4,285,270, Cl. 98-115.0SB.

Schwierz, Theodor, to Siemens Aktiengesellschaft. Directional antenna system with electronically controllable sweep of the beam direction. 4,286,267, Cl. 343-100.0SA.

Schwob, Charles J., to Mead Corporation, The. Ink jet printer and start up method therefor. 4,286,272, Cl. 346-75.000.

Schwoerer, Frank; and Wachter, William J., to Wachter Associates, Inc. Steam generator tube support system. 4,285,396, Cl. 165-162.000.

Science Union Et Cie: *See*—
Vincent, Michel; Remond, Georges; and Bure, Jacques, 4,285,943, Cl. 424-248.570.

SCM Corporation: *See*—
Ting, Vincent W., 4,285,847, Cl. 260-29.2EP.

Scott Bader Company Limited: *See*—
Russell, Robert F., 4,285,845, Cl. 260-28.00R.

Scott, Curtis E.: *See*—
Charles, Richard J.; Prochazka, Svante; and Scott, Curtis E., 4,285,732, Cl. 106-57.000.

Scott, Sandra F.: *See*—
Cox, Ginger C.; and Scott, Sandra F., 4,285,350, Cl. 132-9.000.

Sea Log Corporation: *See*—
Stiles, Kenneth M., 4,285,749, Cl. 156-180.000.

Seeger, Karl: *See*—
Kiencke, Uwe; Jundt, Werner; and Seeger, Karl, 4,285,314, Cl. 123-422.000.

Seegers, Glen A., to American Stair Corporation, Inc. Reinforced tread assembly. 4,285,177. Cl. 52-179.000.

Seeling, Philip F.: *See*—
Bean, Samuel L.; Seeling, Philip F.; Hoffman, Robert J.; and Low, William W., 4,285,923, Cl. 423-385.000.

Seiner, Jerome A.: *See*—
Dowbenko, Rostyslaw; Schimmel, Karl F.; and Seiner, Jerome A., 4,285,849, Cl. 260-29.6NR.

Sekella, Thomas C., to Facet Enterprises, Inc. Air gap adjuster for electric clutches. 4,285,420, Cl. 192-84.00C.

Seki, Kazuichi: *See*—
Kato, Yoshio; Seki, Kazuichi; and Shimizu, Yoshio, 4,285,636, Cl. 416-197.00A.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Aqueous coatings based on copolymers with a mixture of polymeric polyol and bisphenol-propylene oxide adduct. 4,285,844, Cl. 260-23.0EP.

Seko, Maomi: *See*—
Miyake, Tetsuya; Takeda, Kunihiko; Miyata, Naoki; Saeki, Tatsushi; and Seko, Maomi, 4,285,811, Cl. 568-422.000.

Senju Pharmaceutical Co., Ltd.: *See*—
Ogata, Kazumi, 4,285,738, Cl. 134-26.000.

Senshu, Takao: *See*—
Hayashi, Masakatsu; Tanaka, Takeo; Natori, Tatsuo; Aizawa, Tatsushi; Kojima, Shigeru; and Senshu, Takao, 4,285,385, Cl. 164-9.000.

Serlin, Irving: *See*—
Wilkinson, Walter J.; and Serlin, Irving, 4,285,989, Cl. 427-14.100.

Seton Company: *See*—
Cioca, Gheorghe; and Siegler, Marcel, 4,285,986, Cl. 426-657.000.
Siegler, Marcel, 4,285,689, Cl. 8-94.260.

Sevastakis, Gus. Cooling system for continuous casting of bar products. 4,285,388, Cl. 164-444.000.

Sevastyanov, Boris A.: *See*—
Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D., 4,286,062, Cl. 435-188.000.

Shah, Raj: *See*—
Sekmakas, Kazys; and Shah, Raj, 4,285,844, Cl. 260-23.0EP.

Shanley, Stephen E., Jr. Rotary milling cutter. 4,285,618, Cl. 407-54.000.

Sharples, Thomas D.: *See*—
Ishimaru, Kenzo; and Sharples, Thomas D., 4,285,904, Cl. 264-322.000.

Shartner, Eduard G.: *See*—
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A., 4,285,599, Cl. 366-17.000.

Shats, Mikhail: *See*—
Ben-Nathan, Samuel; Neumeister, Marwin G.; Shats, Mikhail; and McCallum, Robert S., 4,286,149, Cl. 250-223.00R.

Shaw, Henry; and Skopp, Alvin, to Exxon Research & Engineering Co. Minimizing NO_x production in operation of gas turbine combustors. 4,285,193, Cl. 60-39.060.

Shearer, Harry D., to E-Systems, Inc. Wideband digital frequency discriminator and phase and frequency detector. 4,286,223, Cl. 329-50.000.

Shell Oil Company: *See*—
Haynes, George R., 4,285,953, Cl. 424-263.000.
Haynes, George R., 4,285,970, Cl. 424-304.000.
Kramer, Petrus A.; and Verbrugge, Pieter A., 4,285,882, Cl. 260-463.000.
St. Clair, David J.; and Fwins, Earle E., 4,286,077, Cl. 525-232.000.
van Raam, Leopold; Ruyter, Herman P.; and van Breugel, Josefus W., 4,285,140, Cl. 34-15.000.

Shell, Ronald G.; Brownell, Wallace F.; Fedder, Richard C.; and Christou, Kyriakos, to Burroughs Corporation. Ink droplet catcher assembly. 4,286,274, Cl. 346-75.000.

Shelukha, Nikolai N.: *See*—
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukhanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Znukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.

Sheng-Wei, Wu. Consecutively nailing machine. 4,285,456, Cl. 227-147.000.

Sherman, Eli H. Generator for use with loads having changing impedance characteristics. 4,286,194, Cl. 315-209.00R.

Shibata, Kunio: *See*—
Suzuki, Hiroshi; Shibata, Kunio; and Sugita, Kazuhiko, 4,285,551, Cl. 308-9.000.

Shibata, Norio: *See*—
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Gross, Franz, 4,286,239, Cl. 333-245.000.
Klobe, Martin, 4,285,247, Cl. 73-861.240.
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Fairbank, Paul, 4,285,447, Cl. 222-200.000.

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Sligh, Alistair D. M.; and Pitches, Brian E., to Ferranti Limited. Acceleration responsive monitor. 4,286,252, Cl. 340-27.0SS.
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Lissau, Frederic, 4,285,361, Cl. 137-454.600.
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Small, Maynard E. Mass circulation publication bingo type game. 4,285,520, Cl. 273-240.000.
Small, Owen M.: *See—*
Mathias, Richard G.; Novak, John D.; Rough, Robert R., Sr.; Small, Owen M.; and Willinger, Sigmund, 4,285,718, Cl. 65-134.000.
Smith, Everett H.: *See—*
Silberman, Raphael J.; and Smith, Everett H., 4,285,533, Cl. 285-2.000.
Smith, George L. Stepped baffle storage bin. 4,285,425, Cl. 193-27.000.
Smith, Howard L.: *See—*
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Smith International, Inc.: *See—*
Allen, James H., 4,285,409, Cl. 175-336.000.
Garrett, William R.; and Young, David E., 4,285,406, Cl. 175-195.000.
Smith, John R.; Ciaramitaro, William; and Gopal, Raj, to Westinghouse Electric Corp. Method and apparatus for the determination of the mass of an impacting object. 4,285,241, Cl. 73-572.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; and Miles, Peter D., 4,285,952, Cl. 424-263.000.
Smith, Michael D.: *See—*
Jacques, Joseph L., Jr.; Smith, Michael D.; and Yehl, Gregory C., 4,286,246, Cl. 337-94.000.
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Berges, David A., 4,286,089, Cl. 544-27.000.
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Snell, John H. Tool for installation of toggle-screw anchors. 4,285,225, Cl. 72-114.000.
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Cazzaro, Giorgio; Cavallaro, Antonino; Salan, Antonio; and Matera, Giancarlo, 4,285,900, Cl. 264-182.000.
Societe Industrielle de Liaisons Electriques Silec: *See—*
Jocteur, Robert, 4,285,648, Cl. 425-97.000.
Societe les Piles Wonder: *See—*
Benoit, Raymond A., 4,286,312, Cl. 362-309.000.
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Sokolov, Vasily I.: *See—*
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Solid Photography Inc.: *See—*
DiMatteo, Paul, 4,285,754, Cl. 156-264.000.
Solid State Systems, Inc.: *See—*
Mehaffey, Joseph H.; and Szlam, Aleksander, 4,286,118, Cl. 179-18.0AD.
Soloviev, Alexandr N.: *See—*
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Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., 4,286,322, Cl. 364-200.000.
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Soni, Vasantlal B.; and Swaminathan, Krishnasami, to Union Carbide Corporation. Process of making manganous sulphate solution with low level impurity of potassium for manufacture of electrolytic manganese dioxide. 4,285,913, Cl. 423-50.000.
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Deban, Gilles, 4,286,284, Cl. 358-11.000.
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Nagakubo, Yoshio; and Takano, Masayuki, 4,286,199, Cl. 318-327.000.
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Heatwole, Richard, 4,285,516, Cl. 272-146.000.
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Specht, Steven J.; and Kircher, Morton S., to Olin Corporation. Slide-back type intercell bus bar connector. 4,285,793, Cl. 204-253.000.
Specker, Steven R.; Sawyer, Craig D.; Crowther, Russell L.; Gitnick, Bennett J.; Walters, Kenneth V.; Brown, Robert E.; and Fennern, Larry E., to General Electric Company. Control cell nuclear reactor core. 4,285,769, Cl. 176-30.000.
Spector, George: *See—*
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Konstant, Anthony N.; and Weider, John J., 4,285,436, Cl. 211-192.000.
Spencer, Harvey J., to Paper Converting Machine Company. Apparatus for stacking product. 4,285,621, Cl. 414-45.000.
Spencer Wright Industries, Inc.: *See—*
Bardsley, Harold B., 4,285,170, Cl. 51-288.000.
Inman, Billy E., 4,285,287, Cl. 112-79.00R.
Inman, Billy E.; and Phillips, Wheeler E., 4,285,288, Cl. 112-79.00R.
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Taylor, Henry D., 4,285,362, Cl. 137-489.000.
Spinner, Georg. HF Coaxial plug connector. 4,285,564, Cl. 339-89.00C.
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Spreadbury, Robert J.; and Banic, James M., Jr., to Westinghouse Electric Corp. High-power AC voltage stabilizer. 4,286,207, Cl. 323-263.000.
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, to International Flavors & Fragrances Inc. Use of certain bridged ketones in augmenting or enhancing the organoleptic properties of smoking tobacco. 4,285,349, Cl. 131-276.000.
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Fortune, Dennis M.; and Molitor, Victor D., 4,285,390, Cl. 165-2.000.
Staley, Ronald W.; and Roberts, Jonathan W., to Essex Group, Inc. Insulating mica paper and tapes thereof. 4,286,010, Cl. 428-215.000.
Stamboulian, Nazareth, to American Safety Equipment Corporation. Seat belt retractor mechanism housing. 4,285,478, Cl. 242-107.000.
Stamicarbon, B.V.: *See—*
Jongsma, Cornelis, 4,285,777, Cl. 203-32.000.
Nommensen, Johan P., 4,285,367, Cl. 137-888.000.
Standard Manufacturing Company, Incorporated: *See—*
Oswald, Norman D.; and Mankey, Harry S., 4,285,627, Cl. 414-695.500.
Standard Oil Company (Indiana): *See—*
Akin, Cavit; and Murphy, Rose M., 4,285,976, Cl. 426-60.000.
Klotz, Marvin R.; and Ely, Stephen R., 4,285,919, Cl. 423-277.000.
Standard Oil Company (Ohio): *See—*
McGandy, Edward L., 4,285,792, Cl. 204-195.00R.
Standex Corporation: *See—*
Whyte, Albert J., 4,285,086, Cl. 15-119.00A.
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., to Gulf Research & Development Company. Lubricating oil hydrotreating process. 4,285,807, Cl. 208-216.00R.
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Collins, Denver G., 4,285,334, Cl. 126-437.000.
Stauffer Chemical Company: *See—*
Jassal, Avtar S., 4,285,920, Cl. 423-305.000.
Scher, Herbert B., 4,285,720, Cl. 71-88.000.
Steenburgh, Ronald L. Adjustable vehicle screen. 4,285,383, Cl. 160-374.000.

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Klinteberg, G. Rune; Johansson, N. A. Bertil; Johansson, B. Lennart; and Dahlgren, Christer H., 4,285,526, Cl. 277-153.000.

Stegelman, Albert F., to Phillips Petroleum Company. Time-delay process and control system for electrostatic filter. 4,285,805, Cl. 208-113.000.

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McCoy, French T.; Steinbrunner, Thomas A.; McEvers, Dale L.; and Overholser, Loyal M., 4,285,536, Cl. 292-336.300.

Steinhilber, Helmut. Apparatus for feeding single sheets from a magazine to the printing cylinder of a printing office machine or data processing machine and for stacking the single sheets arriving from the printing cylider. 4,285,607, Cl. 400-625.000.

Steinke, Leo, to Robert Bosch GmbH. Method of preheating an internal combustion engine of the diesel, or similar, type. 4,285,307, Cl. 123-179.0BG.

Steinmetz, John H.: *See*—
Dlugos, Daniel F.; Hansen, Gary G.; and Steinmetz, John H., 4,286,325, Cl. 364-466.000.

Stekolnikov, Leonid I.; Sevastyanov, Boris A.; Shilov, Gennady G.; Belousov, Anatoly A.; and Mamonov, Nikolai D. Process for producing an enzyme preparation to tenderize meat products. 4,286,062, Cl. 435-188.000.

Stella, Joseph A., to Polaroid Corporation. Multipurpose film handling cassette having a modular film processor. 4,285,581, Cl. 352-130.000.

Stelte, David J.; and Kobylar, Alex W., to GTE Automatic Electric Labs Inc. Arrangement for concentrating pulse code modulation processing circuits in a digital telephone office. 4,286,119, Cl. 179-18.0FC.

Stemme, Otto; Wagensonner, Eduard; and Ruf, Wolfgang, to AGFA-Gevaert Aktiengesellschaft. Mechanical film drive for driving motion picture film, particularly in projection and scanning systems. 4,285,455, Cl. 226-188.000.

Stephens, Edwin V., to Infodetics Corporation. Combined transport and gate assembly for document storage and retrieval systems. 4,285,623, Cl. 414-278.000.

Sterck, Lothar: *See*—
Keunecke, Gerhard; Klopfer, Anton; and Sterck, Lothar, 4,285,870, Cl. 260-346.700.
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Sterki, Armin; and Sommer, Gerd R., to Maag Gear-Wheel & Machine Co. Ltd. Tooth flank testing apparatus and method of testing tooth flanks of gears. 4,285,133, Cl. 33-179.50R.

Stevens, George W.: *See*—
DePuy, Ronald G.; and Stevens, George W., 4,285,746, Cl. 156-79.000.

Stewart, James B.; Woltmann, Klaus W.; Faris, Edwin E.; and Schmidt, Sheldon P., to Metaframe Corporation. Aquarium filtration apparatus. 4,285,813, Cl. 210-169.000.

Stewart, James M. Manifold heat exchanger. 4,285,394, Cl. 165-104.210.

Stewart, Robert C. Vapor powered engine assembly. 4,285,201, Cl. 60-641.00A.

Stiles, Kenneth M., to Sea Log Corporation. Improvements in the fabrication of fiber reinforced resin structures. 4,285,749, Cl. 156-180.000.

Stoklassa, Roland: *See*—
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Stoltz, Richard J. Storm drainage systems. 4,285,812, Cl. 210-162.000.

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Stone, Richard W., to Industrial Design and Engineering. Light reflective bicycle safety device and method of making the same. 4,285,573, Cl. 350-99.000.

Stoner, Glenn E.; and Cahen, George L., Jr., to University of Virginia, The; and Research Corporation. Electrolysis electrode. 4,285,796, Cl. 204-290.00R.

Stratmann, Uwe: *See*—
Schaffeler, Alois; and Stratmann, Uwe, 4,286,125, Cl. 200-6.00B.

Strong, Sylvia Y. Urination collection pad. 4,286,002, Cl. 428-74.000.

Struben, Francis L.; and Struben, Jean C. Thermalized awning. 4,285,175, Cl. 52-90.000.

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Struben, Francis L.; and Struben, Jean C., 4,285,175, Cl. 52-90.000.

Sturgeon, Leonard A., to Bralorne Resources Limited. Engine air cut-off device. 4,285,494, Cl. 251-63.000.

Sublette, John D., to GTE Automatic Electric Labs Inc. Current regulated pulse dialer circuit. 4,286,120, Cl. 179-90.00K.

Subramanian, Krishnamoorthy: *See*—
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Sugawara, Yoshitaka, to Hitachi, Ltd. Semiconductor integrated circuit device. 4,286,280, Cl. 357-50.000.

Sugihara, Kunihiko: *See*—
Yoneda, Kenji; Yamamoto, Tadahiro; and Sugihara, Kunihiko, 4,285,318, Cl. 123-568.000.

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Sugita, Kazuhiko: *See*—
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Sugiura, Hiroyuki; Hasegawa, Ryota; and Nakamura, Teruo, to Diesel Kiki Company, Ltd. Air conditioning apparatus comprising refrigerant shortage sensor. 4,285,207, Cl. 62-133.000.

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Sullivan, Daniel A., Jr., to Aluminum Company of America. Metal producing method. 4,285,785, Cl. 204-64.00R.

Sulzer Brothers Limited: *See*—
Luthi, Johannes; and Ziegler, George, 4,285,209, Cl. 62-238.300.

Sumitomo Chemical Company, Limited: *See*—
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Masutani, Kenzo; Horiguchi, Akira; and Sumitomo, Hiroyuki, 4,285,395, Cl. 165-110.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Furukawa, Hiroshi; and Tsuyuri, Takehiko, 4,285,381, Cl. 152-362.00R.

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North, Bernard F., 4,285,690, Cl. 8-186.000.

Sun Electric Corporation: *See*—
Swis, Philip E., 4,285,233, Cl. 73-116.000.

Sundpacma Aktiebolag: *See*—
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Sung, Rodney L.; and Zoleski, Benjamin H., to Texaco Inc. Diesel lubricant containing 5-amino tetrazoles. 4,285,823, Cl. 252-50.000.

Sureau, Robert F. M.: *See*—
Kremer, Gilbert V. H.; Pechmeze, Jacques P. E.; and Sureau, Robert F. M., 4,285,696, Cl. 8-654.000.

Sutter, Clair G., to Sperry Corporation. Torquer apparatus for magnetically suspended members. 4,285,552, Cl. 308-10.000.

Suyama, Tadakazu, to Green Cross Corporation, The. Method for producing thrombolytic preparation. 4,286,063, Cl. 435-215.000.

Suzuki, Hiroshi; Shibata, Kunio; and Sugita, Kazuhiko, to Toyoda Koki Kabushiki Kaisha. Fluid bearing. 4,285,551, Cl. 308-9.000.

Suzuki, Masakazu, to Kabushiki Kaisha Morita Seisakusho. Speed control system in dental radiographic apparatus. 4,286,162, Cl. 250-439.00P.

Suzuki, Masakazu, to Kabushiki Kaisha Morita Seisakusho. Dental radiographic apparatus for photographing entire jaws. 4,286,163, Cl. 250-439.00P.

Suzuki, Motoo: *See*—
Shiga, Tatsuhide; Tsuruoka, Yoshihiro; and Suzuki, Motoo, 4,285,779, Cl. 204-9.000.

Suzuki, Shirou: *See*—
Wagu, Masakatsu; Fukuda, Makoto; and Suzuki, Shirou, 4,285,797, Cl. 204-290.00R.

Suzuki, Takeshi; Hatamori, Takashi; Murao, Mikio; Nezuka, Minoru; Kumagai, Chikanori; and Takagishi, Masaharu, to Kawasaki Jukogyo Kabushiki Kaisha. Suspension type heat exchanger. 4,285,142, Cl. 34-57.00E.

Suzuki, Takeshi: *See*—
Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.

Suzuki, Tsutomu, to Pioneer Electronic Corporation. Video format signal recording and reproducing device. 4,286,281, Cl. 358-4.000.

Suzuki, Yoshiro, to Olympus Optical Company Limited. Magnetic brush developing devices. 4,285,297, Cl. 118-657.000.

Sviniin, Mikhail P.: *See*—
Glukhikh, Vasily A.; Sviniin, Mikhail P.; Fedotov, Mikhail T.; Shirokov, Vladimir P.; Pismannik, Konstantin D.; Schegolev, Alexandr I.; Heger, Adolf; Hanke, Rudolf; and Passler, Helmar, 4,286,166, Cl. 250-492.00B.

Swaim, Martin H., to Van Putten, Theron A. Indestructible handle for mop or broom and method of making same. 4,285,096, Cl. 16-114.00R.

Swaminathan, Krishnasami: *See*—
Soni, Vasantlal B.; and Swaminathan, Krishnasami, 4,285,913, Cl. 423-50.000.

Swars, Helmut: *See*—
Maus, Wolfgang; Niemeyer, Wolfgang; and Swars, Helmut, 4,285,393, Cl. 165-76.000.

Swartout, Bruce E., to U.S. Flywheels, Inc. Rim for use in flywheels for kinetic energy storage. 4,285,251, Cl. 74-572.000.

Sweeny, James G.: *See*—
Iacobucci, Guillermo A.; and Sweeny, James G., 4,285,982, Cl. 426-250.000.
Iacobucci, Guillermo A.; and Sweeny, James G., 4,285,985, Cl. 426-540.000.

Swidler, Ronald: *See*—
Landa, Benzion; Swidler, Ronald; and Gardiner, Kenneth W., 4,286,039, Cl. 430-119.000.

Swinea, Jessie D., Jr., to Vultron, Inc. Dimmer circuit for fluorescent lamps. 4,286,195, Cl. 315-224.000.

Swis, Philip E., to Sun Electric Corporation. System for hot testing engines. 4,285,233, Cl. 73-116.000.

Sydow, Udo: *See*—
Englemann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,286,054, Cl. 430-544.000.

Synemed, Inc.: *See*—
Murr, William C., 4,285,580, Cl. 351-35.000.

Szabo, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,865, Cl. 260-239.30P.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,285,950, Cl. 424-256.000.

Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, to Richter Gedeon Vegyeszeti Gyar Rt. Process for the preparation of halogenated 15-hydroxy-E-homoeburnane compounds. 4,285,865, Cl. 260-239.30P.

Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, to Richter Gedeon Vegyeszeti Gyar Rt. 10-halo-E-homoeburnane derivatives, a process for the preparation thereof, a process for the use thereof as vasodilators, and vasodilating compositions thereof. 4,285,950, Cl. 424-256.000.

Szlam, Aleksander: *See*—
Mehaffey, Joseph H.; and Szlam, Aleksander, 4,286,118, Cl. 179-18.0AD.

Szmuszkovicz, Jacob: *See*—
Kane, Michael P.; and Szmuszkovicz, Jacob, 4,286,106, Cl. 564-220.000.

Szycher, Michael, to Thermo Electron Corporation. Keratoprosthetic polyurethane. 4,285,073, Cl. 3-13.000.

T. A. Pelsue Company: *See*—
Beavers, Allan E., 4,285,354, Cl. 135-1.00R.
Pelsue, Bradley A.; and Beavers, Allan E., 4,285,269, Cl. 98-33.00R.

Tabacek, Joseph A.: *See*—
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,285,807, Cl. 208-216.00R.
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,285,836, Cl. 252-438.000.

Taback, Israel; and Frosch, Robert A. Small conductive particle sensor. 4,286,209, Cl. 324-71.0CP.

Taciuk, William, to Alberta Oil Sands Technology and Research Authority. Apparatus and process for recovery of hydrocarbon from inorganic host materials. 4,285,773, Cl. 202-100.000.

Tadewald, Thomas D., to UOP Inc. Heater assembly. 4,286,143, Cl. 219-443.000.

Taguchi, Yoshio: *See*—
Betsuda, Yasuhiro; Taguchi, Yoshio; and Takashashi, Yasuo, 4,285,892, Cl. 264-23.000.

Takagishi, Kenichiro; and Tsuda, Yutaka. Apparatus for forming and installing underground drainpipe. 4,285,613, Cl. 405-156.000.

Takagishi, Masaharu: *See*—
Suzuki, Takeshi; Hatamori, Takashi; Murao, Mikio; Nezuka, Minoru; Kumagai, Chikanori; and Takagishi, Masaharu, 4,285,142, Cl. 34-57.00E.

Takahara, Yasuo; Hayashi, Shigeo; Yamada, Shizuo; and Shibata, Norio, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system. 4,285,317, Cl. 123-568.000.

Takahashi, Jun: *See*—
Sakai, Yoshihiro; Takahashi, Jun; Satoh, Toshiaki; and Ohno, Akira, 4,285,227, Cl. 72-240.000.

Takahashi, Kazuo: *See*—
Takizawa, Masaaki; Matsubara, Noboru; and Takahashi, Kazuo, 4,285,310, Cl. 123-308.000.

Takahashi, Koichi; and Kato, Yoshiaki, to Nissan Motor Company, Limited. Windshield washer of motor vehicle. 4,285,089, Cl. 15-250.020.

Takahashi, Michiko: *See*—
Imataki, Hiroyuki; Takahashi, Michiko; Kobayashi, Masatsune; and Ohta, Tokuya, 4,285,575, Cl. 350-357.000.

Takalo, Kauko A. Expansion or compression machine with interengaging members rotating on perpendicular axes. 4,285,644, Cl. 418-195.000.

Takano, Masayuki: *See*—
Nagakubo, Yoshio; and Takano, Masayuki, 4,286,199, Cl. 318-327.000.

Takaoka, Kazuhiko, to Hitachi, Ltd. Multi-frequency signal receiving apparatus. 4,286,221, Cl. 328-140.000.

Takashashi, Yasuo: *See*—
Betsuda, Yasuhiro; Taguchi, Yoshio; and Takashashi, Yasuo, 4,285,892, Cl. 264-23.000.

Takata, Akira: *See*—
Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,285,319, Cl. 123-585.000.

Takeda Chemical Industries, Ltd.: *See*—
Tsushima, Susumu; Matsumoto, Norichika; and Kato, Masayasu, 4,286,088, Cl. 544-16.000.

Takeda, Kunihiko: *See*—
Miyake, Tetsuya; Takeda, Kunihiko; Miyata, Naoki; Saeki, Tatsushi; and Seko, Maomi, 4,285,811, Cl. 568-422.000.

Takeguchi, Milton M.: *See*—
Messing, Ralph A.; Oppermann, Robert A.; Simpson, Lynn B.; and Takeguchi, Milton M., 4,286,061, Cl. 435-176.000.

Takei, Haruo: *See*—
Mihara, Yuji; Takei, Haruo; Inoue, Noriyuki; Ikeda, Tadashi; and Kuwabara, Kenichi, 4,286,044, Cl. 430-264.000.

Takeshita, Isao; Hozumi, Shiro; and Wakamatsu, Nobuhiko, to Matsushita Electric Industrial Co., Ltd. Absorption type refrigerating machine of hybrid constructions. 4,285,208, Cl. 62-141.000.

Takiguchi, Shinji: *See*—
Iwao, Soichi; Takiguchi, Shinji; and Sakata, Toshio, 4,285,295, Cl. 118-60.000.

Takiguchi, Yosimitsu: *See*—
Oka, Yuichi; and Takiguchi, Yosimitsu, 4,286,173, Cl. 307-440.000.

Takizawa, Masaaki; Matsubara, Noboru; and Takahashi, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Dual intake valve type internal combustion engine. 4,285,310, Cl. 123-308.000.

Tamura, Hiroshi: *See*—
Nishizima, Hideyo; Ema, Hideaki; Tamura, Hiroshi; and Akiyoshi, Hideki, 4,286,035, Cl. 430-85.000.

Tanabe, Eiji; and Vaguine, Victor A., to Varian Associates, Inc. Variable energy standing wave linear accelerator structure. 4,286,192, Cl. 315-5.410.

Tanabe, Rippei; Yokoyama, Yuji; and Hirano, Jiro, to Nippon Oil and Fats Company, Ltd. Method for producing glycidyl (metha)acrylate. 4,285,872, Cl. 260-348.120.

Tanaka, Minoro; Yagi, Kenkichi; and Shimizu, Kitao, to Toray Industries, Incorporated. Composite sheet material. 4,286,014, Cl. 428-290.000.

Tanaka, Takeo: *See*—
Hayashi, Masakatsu; Tanaka, Takeo; Natori, Tatsuo; Aizawa, Tatsushi; Kojima, Shigeru; and Senshu, Takao, 4,285,385, Cl. 164-9.000.

Tanaka, Yasuo; Shimokawa, Kenji; and Nagatomo, Muneshige, to Director-General of Agency of Industrial Science and Technology. Solar energy collecting system. 4,285,333, Cl. 126-433.000.

Tapp, David J.: *See*—
Schuessler, John C.; and Tapp, David J., 4,286,244, Cl. 335-230.000.

Taylor, Eugene D., to J. I. Case Company. Coupling assembly for heating element. 4,286,139, Cl. 219-208.000.

Taylor, Harvey W., Jr., to Du Pont de Nemours, E. I., and Company. Negative-working dry peel apart photopolymer element with polyvinylformal binder. 4,286,043, Cl. 430-253.000.

Taylor, Henry D., to Sperry Corporation. Power transmission. 4,285,362, Cl. 137-489.000.

Taylor, Peter J., to Plessey Handel und Investments AG. Radial flow centrifugal impeller. 4,285,631, Cl. 415-143.000.

Taylor, Raymond E., to Theta Industries, Inc. Electric tube furnace. 4,286,142, Cl. 219-390.000.

Taylor, Richard J.; and Bennett, Phillip P., to Micro Consultants Limited. Digital video processor. 4,286,291, Cl. 358-138.000.

Taylor, Vaughn W.: *See*—
Hardy, John F.; Kintz, Donald P.; and Taylor, Vaughn W., 4,285,846, Cl. 260-29.20E.

TDK Electronics Co., Ltd.: *See*—
Isobe, Yukihiro; Hayama, Masashi; and Hirabayashi, Kenji, 4,285,825, Cl. 252-62.540.

Teagno, Vladimiro; and Trevisiol, Franco, to AMP Incorporated. Dual purpose electrical connector. 4,285,562, Cl. 339-33.000.

Teal, William F.: *See*—
Weaver, Nyal J.; and Teal, William F., 4,285,506, Cl. 270-30.000.

Tecumseh Products Company: *See*—
Adams, Gar M., 4,285,440, Cl. 220-202.000.
Kaufman, Vernon R.; and Nelson, Eugene L., 4,285,305, Cl. 123-146.50A.

Teijin Chemicals Ltd.: *See*—
Tokuda, Toshimasa, 4,285,855, Cl. 260-45.750.

Teleprompter Corporation: *See*—
Waldo, James K., 4,286,288, Cl. 358-114.000.

Teletype Corporation: *See*—
Heeren, Richard H., 4,285,117, Cl. 29-571.000.

Telmet, Juhan: *See*—
Slavin, Michael; and Telmet, Juhan, 4,286,257, Cl. 340-388.000.

Temple, Davis L., Jr., to Mead Johnson & Company. 9-Cyclohexyl-2-alkoxy-9H-adenine process. 4,286,093, Cl. 544-276.000.

Tennenhouse, Gerald J.: *See*—
Mangels, John A.; and Tennenhouse, Gerald J., 4,285,895, Cl. 264-65.000.

Terao, Kazuhiko: *See*—
Nomura, Harehiko; Koyama, Kenichi; and Terao, Kazuhiko, 4,285,120, Cl. 29-599.000.

Terrill, Garrett D.; and Edwards, Lynn D., to Mueller Co. Pipeline stopper and pipe fitting. 4,285,368, Cl. 138-89.000.

Terry, Bernard W. H.: *See*—
Crosby, John; and Terry, Bernard W. H., 4,285,778, Cl. 203-48.000.

Testut-Aequitas: *See*—
Dauge, Gilbert V.; and Langlais, Jacques F., 4,285,413, Cl. 177-210.00C.

Texaco Development Corp.: *See*—
McEntire, Edward E.; and Zimmerman, Robert L., 4,286,072, Cl. 521-118.000.

Texaco Inc.: *See*—
Marquis, Edward T.; and Watts, Lewis W., Jr., 4,286,107, Cl. 564-332.000.
Sung, Rodney L.; and Zoleski, Benjamin H., 4,285,823, Cl. 252-50.000.

Texas Instruments Incorporated: *See*—
Ott, Granville E., 4,286,320, Cl. 364-200.000.
Rao, G. R. Mohan; and White, Lionel S., Jr., 4,286,178, Cl. 307-355.000.

Textron Inc.: *See*—
Haydt, Richard J., 4,285,358, Cl. 137-85.000.

Theeuwes, Felix, to ALZA Corporation. Article of manufacture comprising semipermeable polymer and dextran derivative. 4,286,067, Cl. 521-27.000.
Theeuwes, Felix: *See—*
Ayer, Atul D.; and Theeuwes, Felix, 4,285,987, Cl. 427-3.000.
Thermo Electron Corporation: *See—*
Szycher, Michael, 4,285,073, Cl. 3-13.000.
Thermocycle, Inc.: *See—*
Rannow, Robert L., 4,285,392, Cl. 165-50.000.
Theta Industries, Inc.: *See—*
Taylor, Raymond E., 4,286,142, Cl. 219-390.000.
Thibodeau, Raymond J., to Conwed Corporation. Reinforced thermoplastic film sheet. 4,285,998, Cl. 428-35.000.
Thiel, Erich: *See—*
Stolz, Albert; Thiel, Erich; Bochenek, Volker; and Stoklassa, Roland, 4,285,316, Cl. 123-514.000.
Thilo, Peer: *See—*
Schreyer, Karlheinz; and Thilo, Peer, 4,286,117, Cl. 179-5.00R.
Thomas, Doverd E. Method and apparatus for collecting poultry. 4,285,299, Cl. 119-17.000.
Thomas, Glenn R.: *See—*
Mrenna, Stephen A.; Maier, Alfred E.; and Thomas, Glenn R., 4,286,242, Cl. 335-160.000.
Thomas, Mark A. Color demonstration device and method. 4,285,673, Cl. 434-98.000.
Thomas, William R.: *See—*
Andary, Thomas J.; Berkebile, L. Raymond; Thomas, William R.; and Tse, Daphne C., 4,286,056, Cl. 435-3.000.
Thome, Paul. Method for assembling vertical ducts by electron-welding. 4,286,137, Cl. 219-121.0EC.
Thompson, Gregory J.; and Vickers, Anthony G., to UOP Inc. Catalyst regeneration apparatus. 4,285,908, Cl. 422-143.000.
Thompson, Richard R. Propeller assembly. 4,285,637, Cl. 416-202.000.
Thompson, Thomas K., to Owens-Corning Fiberglass Corporation. Apparatus and method for the production of glass fibers. 4,285,712, Cl. 65-2.000.
Thomson-CSF: *See—*
Diamand, Felix, 4,286,276, Cl. 357-13.000.
Epsztein, Bernard; and Fleury, George, 4,286,191, Cl. 315-3.600.
Eranian, Armand; Dubois, Jean-Claude; Gazard, Maryse; and Barre, Francoise, 4,285,788, Cl. 204-159.160.
Matherat, Philippe, 4,286,264, Cl. 340-744.000.
Puech, Claude; Leclerc, Pierre; de Cremoux, Baudouin; Hirtz, Pierre; and Di Forte, Marie A., 4,286,232, Cl. 331-94.50H.
Sadou, Jean-Claude B., 4,286,116, Cl. 179-1.00P.
Ursenbach, Francois, 4,286,238, Cl. 333-206.000.
Tick, Paul A.: *See—*
Sanford, Leon M.; and Tick, Paul A., 4,285,730, Cl. 106-47.00R.
Tidland Corporation: *See—*
Smith, Willis D., 4,285,684, Cl. 493-355.000.
Tilley, Jefferson W.: *See—*
Fahrenholtz, Kenneth E.; Guthrie, Robert W.; Kierstead, Richard W.; and Tilley, Jefferson W., 4,285,873, Cl. 260-348.450.
Ting, Vincent W., to SCM Corporation. Polymerization process and product. 4,285,847, Cl. 260-29.2EP.
Tinnell, James E. Treatment for herpes virus. 4,285,934, Cl. 424-148.000.
TLM Industries, Inc.: *See—*
McCoy, French T.; Steinbrunner, Thomas A.; McEvers, Dale L.; and Overholser, Loyal M., 4,285,536, Cl. 292-336.300.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Matsubara, Yutaka, 4,285,655, Cl. 425-461.000.
Todd, Paul H., Jr.; and Haley, Howard E., to Kalsec, Inc. Liquid seasoning compositions III. 4,285,981, Cl. 426-250.000.
Toho Beslon Co., Ltd.: *See—*
Yoshida, Masatoshi; and Hirai, Minoru, 4,285,831, Cl. 252-423.000.
Tokuda, Toshimasa, to Teijin Chemicals Ltd. Fire-retardant polycarbonate composition. 4,285,855, Cl. 260-45.750.
Tokyo Juki Kogyo Kabushiki Kaisha: *See—*
Aida, Kikuo, 4,285,294, Cl. 112-311.000.
Tolksdorf, Dieter: *See—*
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Tomarovsky, Petr F.: *See—*
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.
Tompkins, Russell E.: *See—*
Honsinger, Vernon B.; and Tompkins, Russell E., 4,286,188, Cl. 310-162.000.
Toray Industries, Incorporated: *See—*
Asakura, Toshiyuki; Noguchi, Yukio; and Kobayashi, Hiroaki, 4,286,018, Cl. 428-332.000.
Tanaka, Minoro; Yagi, Kenkichi; and Shimizu, Kitao, 4,286,014, Cl. 428-290.000.
Toriuchi, Masaharu: *See—*
Sakai, Nobuo; Hayashi, Hiroshi; Toriuchi, Masaharu; and Katoh, Kazunobu, 4,286,042, Cl. 430-216.000.
Tornos Garcia, Adolfo; Felgueroso Ruiz, Alejandro; and Diaz Fernandez-Raigoso, Aurelio, to Empresa Nacional Siderurgica, S.A. (Ensidesa). Introduced in the detection of leakages of the cooling in blast furnace nozzles. 4,285,229, Cl. 73-40.000.
Toshin Kogyo Co., Ltd.: *See—*
Katsuuma, Kunio, 4,285,274, Cl. 101-128.210.
Towmotor Corporation: *See—*
Paine, John C., 4,285,418, Cl. 188-109.000.
Toyo Engineering Corporation: *See—*
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshdyama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.
Toyo Seikan Kaisha, Ltd.: *See—*
Yamada, Morio, 4,285,625, Cl. 414-412.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Okada, Hiroaki; Sonoda, Takefumi; and Shoji, Osamu, 4,285,472, Cl. 239-542.000.
Toyoda Koki Kabushiki Kaisha: *See—*
Suzuki, Hiroshi; Shibata, Kunio; and Sugita, Kazuhiko, 4,285,551, Cl. 308-9.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hattori, Tadashi; Takata, Akira; Fukuda, Tamotsu; and Nakase, Takamichi, 4,285,319, Cl. 123-585.000.
Mizusawa, Shinichiro; Akamatsu, Hideaki; Noda, Fumiyoshi; and Watanabe, Yuji, 4,285,909, Cl. 422-179.000.
Takahara, Yasuo; Hayashi, Shigeo; Yamada, Shizuo; and Shibata, Norio, 4,285,317, Cl. 123-568.000.
Takizawa, Masaaki; Matsubara, Noboru; and Takahashi, Kazuo, 4,285,310, Cl. 123-308.000.
Trautwein, Adolf: *See—*
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Trebor Industries, Inc.: *See—*
Rosenthal, Robert D.; and Rosenthal, Scott B., 4,286,327, Cl. 364-498.000.
Trevisiol, Franco: *See—*
Teagno, Vladimiro; and Trevisiol, Franco, 4,285,562, Cl. 339-33.000.
Troebel, Werner, to Siemens Aktiengesellschaft. Low voltage circuit breaker with subdivided insulating housing. 4,286,130, Cl. 200-303.000.
Tromelin, Jacques: *See—*
Planche, Jean; Tromelin, Jacques; and Vannier, Daniel, 4,286,217, Cl. 324-347.000.
Trukenbrod, Karl: *See—*
Rigler, Josef K.; Ratajczak, Hans-Josef; Leithauser, Horst; and Trukenbrod, Karl, 4,286,071, Cl. 521-96.000.
Trusle, Eleonora B.: *See—*
Gluschenko, Nina V.; Bukin, Vasily N.; Beker, Martin E.; Dmitrenko, Leonid V.; Utenkova, Varvara A.; Kuzmina, Mariya A.; Kutseva, Lidia S.; Bazdyreva, Natalia M.; Liepinsh, Gunar K.; Trusle, Eleonora B.; and Pavlova, Tamara A., 4,286,060, Cl. 435-110.000.
TRW, Inc.: *See—*
Howell, Robert G., 4,286,251, Cl. 338-309.000.
Kirby, Edward, 4,285,565, Cl. 339-176.0MP.
Tsarik, Jury N.: *See—*
Zuzanov, Georgy I.; Mironkin, Iosif S.; Tsarik, Jury N.; Alexandrova, Natalia A.; Kamensky, Sergei N.; and Nevedomsky, Evgeny N., 4,285,704, Cl. 55-274.000.
Tse, Daphne C.: *See—*
Andary, Thomas J.; Berkebile, L. Raymond; Thomas, William R.; and Tse, Daphne C., 4,286,056, Cl. 435-3.000.
Tseng, Samuel C.: *See—*
Goertzel, Gerald; Powell, Carl G.; and Tseng, Samuel C., 4,286,329, Cl. 364-900.000.
Tsubakimoto, Tsuneo; Shimomura, Tadao; Irie, Yoshio; and Masuda, Yoshihiko, to Nippon Shokubai Kagaku Kogyo & Co., Ltd. Absorbent resin composition and process for producing same. 4,286,082, Cl. 526-240.000.
Tsuboi, Hiroaki; and Hosaka, Toshihiko, to Universal Pioneer Corporation. In-focus detecting device. 4,286,147, Cl. 250-201.000.
Tsuda, Yutaka: *See—*
Takagishi, Kenichiro; and Tsuda, Yutaka, 4,285,613, Cl. 405-156.000.
Tsuge, Yukio: *See—*
Kobayashi, Yoshimichi; Tsuge, Yukio; Hirako, Susumu; and Kiniwa, Hideaki, 4,285,789, Cl. 204-181.00C.
Tsuruoka, Yoshihiro: *See—*
Shiga, Tatsuhide; Tsuruoka, Yoshihiro; and Suzuki, Motoo, 4,285,779, Cl. 204-9.000.
Tsushima, Susumu; Matsumoto, Norichika; and Kato, Masayasu, to Takeda Chemical Industries, Ltd. Process for preparing 7-aminocephalosporins. 4,286,088, Cl. 544-16.000.
Tsutsumi, Shigeharu: *See—*
Sato, Nobuhiro; Yamaguchi, Yoshinobu; Kodama, Hitoshi; Koshdyama, Isamu; Kitano, Nanahiko; and Tsutsumi, Shigeharu, 4,285,837, Cl. 252-466.00J.
Tsuyuri, Takehiko: *See—*
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Turnbull, Andrew A., to U.S. Philips Corporation. Photoconductive structures. 4,286,034, Cl. 430-63.000.
Turner, Dale E. Pattern game. 4,285,522, Cl. 273-293.000.
Turner, James W.: *See—*
Mikofalvy, Bela K.; and Turner, James W., 4,286,081, Cl. 526-74.000.
Turner, Ralph L., Jr. Method of sound-proof window construction for building structures. 4,285,184, Cl. 52-741.000.

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Hoffman, Roy L.; Kempke, William G.; McCullough, John W.; Soltis, Frank G.; and Turner, Richard T., 4,286,322, Cl. 364-200.000.
Tye, John M. High speed precision planter. 4,285,444, Cl. 221-211.000.
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Ueda, Seiichi: *See—*
Yotsutsuji, Akira; Ueda, Seiichi; and Uemura, Kiyoshi, 4,285,661, Cl. 425-563.000.
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Uemura, Kiyoshi: *See—*
Yotsutsuji, Akira; Ueda, Seiichi; and Uemura, Kiyoshi, 4,285,661, Cl. 425-563.000.
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Prucher, Helmut; Uhl, Jurgen; Kurmeier, Hans-Adolf; Rudolph, Volkmar; and Wahlig, Helmut, 4,285,961, Cl. 424-273.00R.
Ui, Kunio: *See—*
Iizuka, Takehiko; and Ui, Kunio, 4,285,250, Cl. 74-473.00P.
Underdahl, Alfred J. Method for transferring circular paper filters from a stack of such filters into a coffee maker basket. 4,285,114, Cl. 29-451.000.
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Union Carbide Corporation: *See—*
Hagerty, Robert O.; Lee, Jannan G.; and Yi, Kenneth C., 4,285,602, Cl. 366-177.000.
Kirkpatrick, George F., 4,285,105, Cl. 24-201.00C.
Kozawa, Akiya, 4,285,122, Cl. 29-623.100.
McDonald, James A., 4,285,687, Cl. 493-444.000.
Ongchin, Lucio, 4,286,023, Cl. 428-516.000.
Robeson, Lloyd M.; and Skoler, George A., 4,286,075, Cl. 525-68.000.
Soni, Vasantlal B.; and Swaminathan, Krishnasami, 4,285,913, Cl. 423-50.000.
Walitalo, Charles R.; and Ericson, Alvin E., 4,285,681, Cl. 493-194.000.
Union Special Corporation: *See—*
Ackermann, Manfred; and Alfano, Nicholas, 4,285,291, Cl. 112-184.000.
Martling, Wayne F., 4,285,293, Cl. 112-281.000.
United Aircraft Products, Inc.: *See—*
DeSalve, Dennis W., 4,285,632, Cl. 415-175.000.
U.S. Flywheels, Inc.: *See—*
Swartout, Bruce E., 4,285,251, Cl. 74-572.000.
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Air Force: *See—*
Jones, Carmen B., 4,285,633, Cl. 415-191.000.
Army: *See—*
Bishop, George H., Jr.; and Croft, William J., 4,286,247, Cl. 337-402.000.
Lerman, Russell E., 4,285,277, Cl. 102-487.000.
Longshore, Randolph E., 4,286,277, Cl. 357-30.000.
Morrison, Clyde A.; Wortman, Donald E.; Leavitt, Richard P.; and Karayianis, Nick, 4,286,230, Cl. 331-79.000.
Ottesen, Robert B.; and Morris, Gerald L., 4,286,289, Cl. 358-125.000.
Pier, Gerald B.; and Sadoff, Jerald C., 4,285,936, Cl. 424-180.000.
Wagner, Gilbert F.; and Berger, J. Louis, 4,286,261, Cl. 340-565.000.
Energy: *See—*
Buckwalter, Charles Q., Jr., 4,285,992, Cl. 427-165.000.
Jones, Donald E.; Parker, DeRay; and Boren, Paul R., 4,286,165, Cl. 250-484.000.
Waldrop, Forrest B.; and Jones, Edward, 4,285,782, Cl. 204-32.00R.
Interior: *See—*
Davidson, Charles F., 4,285,914, Cl. 423-179.500.
Flinn, David R.; and Manger, Cheryl L., 4,285,784, Cl. 204-39.000.
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Navy: *See—*
Bocker, Richard P., 4,286,328, Cl. 364-851.000.
Gustafson, Paul R., 4,285,918, Cl. 423-228.000.
Hislop, Alfred R., 4,286,229, Cl. 331-49.000.
Malakhoff, Alexander; and Davis, Sydney, 4,285,414, Cl. 180-126.000.
Staebler, David L.; and Latham, George R., Jr., 4,286,212, Cl. 324-125.000.
Wickman, David L., 4,285,431, Cl. 206-522.000.
U.S. Philips Corporation: *See—*
De Zwart, Maarten; and Heldens, Johannes L. A. M., 4,286,266, Cl. 340-765.000.
Hart, Cornelis M.; and Slob, Arie, 4,286,177, Cl. 307-296.00R.
Iding, Wilhelmus H., 4,286,122, Cl. 179-111.00E.
Immink, Kornelis A.; and Hoogendoorn, Abraham, 4,286,318, Cl. 364-118.000.
Kamps, Hubertus E. L.; and Wulms, Christiaan J. G. H., 4,286,148, Cl. 250-213.0VT.
Klijnstra, Tiede, 4,285,272, Cl. 99-391.000.
Turnbull, Andrew A., 4,286,034, Cl. 430-63.000.
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United States Steel Corporation: *See—*
Bonta, Anthony R.; and Gasche, Charles J., 4,285,491, Cl. 249-102.000.
United Technologies Corporation: *See—*
Arrigoni, John P., 4,285,108, Cl. 29-156.80B.
Universal Pioneer Corporation: *See—*
Tsuboi, Hiroaki; and Hosaka, Toshihiko, 4,286,147, Cl. 250-201.000.
University of California, The Regents of the: *See—*
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Austin, Paul R.; and Brine, Charles J., 4,286,087, Cl. 536-20.000.
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Uno, Takeshi; Ueda, Hirotada; Ikeda, Sadahiro; Ejiri, Masakazu; and Matsuoka, Shinji, to Hitachi, Ltd. Coded label and code reader for the coded label. 4,286,146, Cl. 235-456.000.
UOP Inc.: *See—*
Braun, Richard; Johnson, Russell W.; and Gatsis, John G., 4,285,803, Cl. 208-48.0AA.
Tadewald, Thomas D., 4,286,143, Cl. 219-443.000.
Thompson, Gregory J.; and Vickers, Anthony G., 4,285,908, Cl. 422-143.000.
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Kane, Michael P.; and Szmuszkovicz, Jacob, 4,286,106, Cl. 564-220.000.
Sih, John C., 4,285,869, Cl. 260-345.200.
Sih, John C., 4,286,100, Cl. 560-121.000.
Sih, John C., 4,286,102, Cl. 562-503.000.
Sih, John C., 4,286,103, Cl. 562-503.000.
Sih, John C., 4,286,104, Cl. 562-503.000.
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Urino, Yoshiteru: *See—*
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USM Corporation: *See—*
Bergstrasser, Werner, 4,285,085, Cl. 12-16.400.
Piestert, Gerhardt; and Gilch, Heinz G., 4,285,755, Cl. 156-294.000.
Ustich, Vladimir A.: *See—*
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.
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Utting, George R., to Victoreen Incorporated. Radioactive gas monitor. 4,286,155, Cl. 250-336.000.
Vaguine, Victor A.: *See—*
Tanabe, Eiji; and Vaguine, Victor A., 4,286,192, Cl. 315-5.410.
Vaillancourt, Ellen M. Sled with occupant protection. 4,285,529, Cl. 280-12.00R.
Vakil, Himanshu B., to General Electric Company. Means and method for simultaneously increasing the delivered peak power and reducing the rate of peak heat rejection of a power plant. 4,285,203, Cl. 60-652.000.
Valbrev S.A.R.L.: *See—*
de Valroger, Pierre, 4,286,198, Cl. 318-138.000.
Valmet OY: *See—*
Kankaanpaa, Matti. 4,285,766, Cl. 162-199.000.
Valyocsik, Ernest W.: *See—*
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Vana, John H., to Emhart Industries, Inc. Defrosting problem areas of refrigerated display cases. 4,285,204, Cl. 62-81.000.

Van Allen, David; and Finnemore, Fred M., to Polaroid Corporation. Switch control for camera flash unit. 4,285,589, Cl. 354-145.000.

van Breugel, Josefus W.: *See—*
van Raam, Leopold; Ruyter, Herman P.; and van Breugel, Josefus W., 4,285,140, Cl. 34-15.000.

Vance, Fred L., Jr.: *See—*
Lowery, Kirby, Jr.; and Vance, Fred L., Jr., 4,285,834, Cl. 252-429.00C.

van der Lely, Cornelis. Seeder with pivoting soil breakers. 4,285,284, Cl. 111-85.000.

van der Lely, Cornelis. Soil working machine with resilient support and trailing, rigid control arm. 4,285,404, Cl. 172-708.000.

Vander Molen, Gary L.; and Brown, Timothy A., to Iowa State University Research Foundation, Inc. Concentrate metering apparatus. 4,285,445, Cl. 222-49.000.

van de Vorle, Wilhelmus J. M., to Oce-van der Grinten. Composition and process for developing diazotype material. 4,286,041, Cl. 430-149.000.

Van Loghem, Johannes J.; and La Grouw, Johannes. Building planks and/or methods and/or apparatus for making the same. 4,285,181, Cl. 52-404.000.

van Lomm, Gerard J. E. H., to Oce-Nederland B.V. Process for preparing an electrophotographic element. 4,286,040, Cl. 430-127.000.

Vannier, Daniel: *See—*
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Van Putten, Theron A.: *See—*
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van Raam, Leopold; Ruyter, Herman P.; and van Breugel, Josefus W., to Shell Oil Company. Dewatering and upgrading low rank coal by a two-step hydrothermal treatment. 4,285,140, Cl. 34-15.000.

Van Tuyl, Harold H.: *See—*
Bray, Lane A.; Boldt, Allyn L.; and Van Tuyl, Harold H., 4,285,891, Cl. 264-0.500.

Van Winkle, Howard E.: *See—*
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Varian Associates, Inc.: *See—*
La Riviere, Philip D., 4,286,167, Cl. 250-510.000.
Shively, James F.; Evans, Steven J.; Jory, Howard R.; and Mizuhara, Yosuke M., 4,286,240, Cl. 333-252.000.
Tanabe, Eiji; and Vaguine, Victor A., 4,286,192, Cl. 315-5.410.
Welch, Kimo M., 4,285,710, Cl. 62-40.000.

Vasishth, Ramesh C.; and De Silva, Dodwell P., to Envirosol Systems International, Ltd. Wood stabilizing/treating compositions and method. 4,285,997, Cl. 427-393.000.

VEB Filmfabrik Wolfen: *See—*
Englemann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,286,054, Cl. 430-544.000.

Veeder, George T., III: *See—*
Suk Kang, Kenneth; Veeder, George T., III; and Richey, Danny D., 4,286,059, Cl. 435-101.000.

Velsicol Chemical Corporation: *See—*
Richter, Sidney B., 4,285,721, Cl. 71-88.000.

Venetta, Henry J. Shaker conveyor construction. 4,285,670, Cl. 432-88.000.

Verbrugge, Pieter A.: *See—*
Kramer, Petrus A.; and Verbrugge, Pieter A., 4,285,882, Cl. 260-463.000.

Vermillion, Russell L.; and Bernett, William A., to Minnesota Mining and Manufacturing Company. Coating of fine particles in polyurethane block copolymer binder. 4,286,022, Cl. 428-423.100.

Vertac, Inc.: *See—*
Giuffre, Luigi; and Spaziante, Placido M., 4,285,876, Cl. 260-453.0SP.

Veselkov, Alex A.; Glumov, Ivan F.; Zlotnikov, Leonid A.; Maiko, Viktor P.; and Matusevich, Jury F. Double-channel satellite navigation system. 4,286,270, Cl. 343-113.0DE.

Vickers, Anthony G.: *See—*
Thompson, Gregory J.; and Vickers, Anthony G., 4,285,908, Cl. 422-143.000.

Victoreen Incorporated: *See—*
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Vinals, Joaquin F.: *See—*
Sprecker, Mark A.; Sanders, James M.; Schreiber, William L.; Watkins, Hugh; Vinals, Joaquin F.; Shuster, Edward J.; O'Rourke, Thomas J.; Hagedorn, Myrna L.; and Klemarczyk, Philip, 4,285,349, Cl. 131-276.000.

Vinatzer, Alex, to Durst AG Fabrik Fototechnischer Apparate. Circuit for the control of exposure time in photographic enlarging equipment. 4,285,593, Cl. 355-68.000.

Vincent, Michel; Remond, Georges; and Bure, Jacques, to Science Union Et Cie. Novel pharmaceutical compositions incorporating an aryltrifluoroethanol. 4,285,943, Cl. 424-248.570.

Vincze, Andras: *See—*
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Vishay Intertechnology, Inc.: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
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Vogel, Orville A., to Gearhiser, Hartman L. Threshing machine. 4,285,348, Cl. 130-30.00H.

Vogel, Roger F.: *See—*
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,285,807, Cl. 208-216.00R.
Stanulonis, John J.; Tabacek, Joseph A.; and Vogel, Roger F., 4,285,836, Cl. 252-438.000.

Voino, Ljudmila I.: *See—*
Kaluniants, Kalust A.; Kozhemyakin, Valentin G.; Gracheva, Irina M.; and Voino, Ljudmila I., 4,286,065, Cl. 435-315.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Protze, Dieter, 4,285,545, Cl. 297-483.000.

Von Osten, Jewell; and Duppman, Gilbert F. Cord holder. 4,285,486, Cl. 248-316.00B.

von Sengbusch, Guenter: *See—*
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Voorheis, James T. Burner for a plurality of fluid streams. 4,285,664, Cl. 431-284.000.

Vorwerk & Co. Interholding GmbH: *See—*
Schmitz, Hans, 4,285,092, Cl. 15-378.000.

Voss, Josef, to Voss, Josef. Bird cage. 4,285,301, Cl. 119-17.000.

Vought Corporation: *See—*
Hicks, Ralph R.; and Martinez, Guadalupe J., 4,285,098, Cl. 16-145.000.

VSI Corporation: *See—*
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Vultron, Inc.: *See—*
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W. R. Grace & Co.: *See—*
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Rosenberg, Arnold M.; and Caidis, James M., 4,285,733, Cl. 106-98.000.

Waas, Charles W.: *See—*
Crosier, Claire G.; and Waas, Charles W., 4,285,563, Cl. 339-45.00M.

Wachter Associates, Inc.: *See—*
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Wachter, William J.: *See—*
Schwoerer, Frank; and Wachter, William J., 4,285,396, Cl. 165-162.000.

Wada, Juro; and Itaoka, Toshinari, to Wada, Juro. Contrast composition for angiography. 4,285,928, Cl. 424-5.000.

Wagensonner, Eduard: *See—*
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Wagner, Eugene R.: *See—*
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Wagner, Gilbert F.; and Berger, J. Louis, to United States of America, Army. Apparatus for discriminating between strain and magnetic stimuli in magnetic cored solenoid type transducer line sensors. 4,286,261, Cl. 340-565.000.

Wagner, Hans: *See—*
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Wagner, James L.: *See—*
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Wagner, Ulrich. Methods of engraving workpiece surfaces by etching. 4,286,051, Cl. 430-323.000.

Wagner, Wolfgang, to U.S. Philips Corporation. Device for determining the spatial absorption distribution in a plane of examination. 4,286,156, Cl. 250-363.00S.

Wagu, Masakatsu; Fukuda, Makoto; and Suzuki, Shirou, to Kureha Kagaku Kogyo Kabushiki Kaisha. Cathode for the electrolytic treatment of alkali halide. 4,285,797, Cl. 204-290.00R.

Wahl, John F., to Mallard Manufacturing Corporation. Electronic transmitter device. 4,286,262, Cl. 340-694.000.

Wahle, Peter, to Sundpacma Aktiebolag. Apparatus for setting up slit-boxes. 4,285,679, Cl. 493-125.000.

Wahlig, Helmut: *See—*
Prucher, Helmut; Uhl, Jurgen; Kurmeier, Hans-Adolf; Rudolph, Volkmar; and Wahlig, Helmut, 4,285,961, Cl. 424-273.00R.

Wait, Hershey, to General Box Company. Pallet box. 4,285,438, Cl. 217-43.00A.

Waite, Roland, to Fiber Industries, Inc. Apparatus for quenching melt-spun filaments. 4,285,646, Cl. 425-72.00S.

Wakamatsu, Nobuhiko: *See—*
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Walchhutter, Ulrico. Roller kiln provided with a drying tunnel, particularly for ceramic or refractory materials 4,285,669, Cl. 432-82.000.

Waldo, James K., to Teleprompter Corporation. Apparatus and method for tamper resistant channel attenuation in subscription television converter. 4,286,288, Cl. 358-114.000.

Waldrop, Forrest B.; and Jones, Edward, to United States of America, Energy. Method for providing uranium with a protective copper coating. 4,285,782, Cl. 204-32.00R.

Waldroup, Roy W.: *See—*
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Walitalo, Charles R.; and Ericson, Alvin E., to Union Carbide Corporation. Tear resistant separable end-connected bags. 4,285,681, Cl. 493-194.000.
Walker Crosweller & Company Limited: *See—*
North, Royston J., 4,285,465, Cl. 236-12.00A.
Wallace, Richard B., to Oakland Corporation, The. Thread lock. 4,285,378, Cl. 411-258.000.
Walsh, James L.: *See—*
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Warner-Lambert Company: *See—*
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Chen, Evan N.; Crainich, Lawrence; and Ferraro, Frank A., 4,285,125, Cl. 30-53.000.
Hoefle, Milton L., 4,285,951, Cl. 424-263.000.
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Warthen, William P., to Milliken Research Corporation. Synthetic yarn device. 4,285,753, Cl. 156-251.000.
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Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, to Akai Electric Company Limited. Mn-Zn single crystalline ferrite head and a method of making the same. 4,285,894, Cl. 264-61.000.
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Watanabe, Yuji: *See—*
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Watrous, Donald L., to General Electric Company. Interface circuit for standard voltage regulators. 4,286,205, Cl. 322-8.000.
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Weaver, Nyal J.; and Teal, William F. Cloth spreading and clamping apparatus. 4,285,506, Cl. 270-30.000.
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Labaw, Clifford S.; and Webb, Robert L., 4,285,878, Cl. 260-453.700.
Weber, Georg: *See—*
Eidenschink, Rudolf; Pohl, Ludwig; Weber, Georg; and Del Pino, Fernando, 4,285,829, Cl. 252-299.630.
Weber, Jurgen: *See—*
Cornils, Boy; De Win, Werner; and Weber, Jurgen, 4,285,875, Cl. 260-413.000.
Weber, Kurt, to Ciba-Geigy Corporation. Novel distyrylbenzene containing sulfonic acid groups. 4,285,885, Cl. 260-505.00R.
Weber, Michael J.: *See—*
Nelson, Carl L.; Haynes, Darrel W.; and Weber, Michael J., 4,285,071, Cl. 3-1.912.
Webinger, George, to Champion International Corporation. Folding shirt card and blank therefor. 4,285,427, Cl. 206-292.000.
Webster, Sherwood F.; and Heise, Richard L. Variable capacity fuel delivery system for engines. 4,285,320, Cl. 123-593.000.
Wedgwood, Sidney, to Interdri Limited. Method and apparatus for drying articles of ceramic ware. 4,285,141, Cl. 34-21.000.
Wedzik, Theresa M. Drinking cup lid. 4,285,442, Cl. 220-270.000.
Wehinger, Egbert; and Bossert, Friedrich, to Bayer Aktiengesellschaft. 1,4-Dihydropyridinecarboxylic acids. 4,285,955, Cl. 424-266.000.
Wehner, Wolfgang; and Abeler, Gerd, to Ciba-Geigy Corporation. Organo-tin compounds, process for their preparation and their use. 4,285,856, Cl. 260-45.75S.
Weichman, Bernard E., to Multi Mineral Corporation. Integrated in situ shale oil and mineral recovery process. 4,285,547, Cl. 299-2.000.
Weider, John J.: *See—*
Konstant, Anthony N.; and Weider, John J., 4,285,436, Cl. 211-192.000.
Weidman, William H.: *See—*
Fetchu, David C.; and Weidman, William H., 4,285,651, Cl. 425-192.00R.
Weir, Casper J., Jr. Oscillator for reciprocating tool or other device. 4,285,405, Cl. 173-162.00R.
Weiss, Gary A., to Pacesetter Management Corp. Message preparation timing apparatus. 4,286,112, Cl. 178-23.00R.
Welch, Kimo M., to Varian Associates, Inc. Cryogenic device for restricting the pumping speed of selected gases. 4,285,710, Cl. 62-40.000.
Well Tools, Inc.: *See—*
Franks, Robert L., Jr., 4,285,408, Cl. 175-325.000.
Welsch, John H.: *See—*
Giza, Gerald J.; and Welsch, John H., 4,285,783, Cl. 204-35.00N.
Welty, Joseph M., to Branson International Plasma Corp. Gas plasma reactor for circuit boards and the like. 4,285,800, Cl. 204-298.000.
Wenger, Lavon G.; Rokey, Galen J.; and Ben-Gera, Itamar, to Wenger Manufacturing. Enzymatic conversion of high moisture shear extruded and gelatinized grain material. 4,286,058, Cl. 435-99.000.
Wenger Manufacturing: *See—*
Wenger, Lavon G.; Rokey, Galen J.; and Ben-Gera, Itamar, 4,286,058, Cl. 435-99.000.
Wenzel, Wolfgang: *See—*
Quiring, Bernd; Wenzel, Wolfgang; Niederdellmann, Georg; Wagner, Hans; and Goyert, Wilhelm, 4,286,080, Cl. 525-455.000.
Werner, Karl-Heinz: *See—*
Fadler, Kurt; and Werner, Karl-Heinz, 4,285,423, Cl. 192-106.200.
West, Gerd: *See—*
Englemann, Horst; Redmann, Rainer; Bethke, Monika; Melz, Christa; West, Gerd; Mistol, Jurgen; and Sydow, Udo, 4,286,054, Cl. 430-544.000.
Western Electric Co., Inc.: *See—*
Chisholm, William M., 4,285,123, Cl. 29-764.000.
Garrett, Robert W., Sr.; Horning, Donald E.; and Merkel, Dennis L., 4,285,433, Cl. 209-573.000.
Jablonowski, Donald P., 4,286,293, Cl. 358-199.000.
Westinghouse Electric Corp.: *See—*
Calhoun, Gregory L.; and Cassette, Angelo, 4,285,503, Cl. 266-71.000.
Caputo, William R., 4,286,222, Cl. 328-155.000.
Downs, Robert E., 4,285,771, Cl. 176-76.000.
Isenberg, Arnold O., 4,285,790, Cl. 204-195.00R.
Johnson, Frederick O., 4,286,315, Cl. 363-87.000.
Montgomery, Lon W., 4,286,183, Cl. 310-62.000.
Mrenna, Stephen A.; Maier, Alfred E.; and Thomas, Glenn R., 4,286,242, Cl. 335-160.000.
Smith, John R.; Ciaramitaro, William; and Gopal, Raj, 4,285,241, Cl. 73-572.000.
Spreadbury, Robert J.; and Banic, James M., Jr., 4,286,207, Cl. 323-263.000.
Williams, Charles F., 4,286,287, Cl. 358-100.000.
Wise, Carl D.; and Heazel, Vincent M., Jr., 4,286,228, Cl. 331-49.000.
Yoldas, Bulent E., 4,286,024, Cl. 428-446.000.
Young, Robert G.; and Skwirut, Henry, 4,286,190, Cl. 313-493.000.
Wevers, Jean: *See—*
Barrat, Christian R.; Wevers, Jean; and Koster, Robertus J. C., 4,285,841, Cl. 252-559.000.
Whirlpool Corporation: *See—*
Einset, Eystein; and Hageman, James R., 4,286,133, Cl. 219-10.55F.
White Farm Equipment Company: *See—*
Deckler, Harry C., 4,285,268, Cl. 91-517.000.
White, Harvey C. Rotary fluid pressure device. 4,285,643, Cl. 418-61.00B.
White, Lionel S., Jr.: *See—*
Rao, G. R. Mohan; and White, Lionel S., Jr., 4,286,178, Cl. 307-355.000.
White, William J.: *See—*
Lorenze, Robert V., Jr.; and White, William J., 4,286,278, Cl. 357-30.000.
Whitear, Brian R. D.: *See—*
Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Reeves, David L. R.; and Wood, Glenn P., 4,285,859, Cl. 260-152.000.
Whitmore, Charles H.: *See—*
Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., 4,285,639, Cl. 417-218.000.
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Whyte, Albert J., to Standex Corporation. Self-wringing mop. 4,285,086, Cl. 15-119.00A.
Wickman, David L., to United States of America, Navy. Inflatable blade bag. 4,285,431, Cl. 206-522.000.
Wilber, James A.; and Christopher, Todd J., to RCA Corporation. VFO having plural feedback loops. 4,286,235, Cl. 331-116.00R.
Wilber, James A.: *See—*
Christopher, Todd J.; and Wilber, James A., 4,286,282, Cl. 358-8.000.
Pyles, Gerald D.; Wilber, James A.; and Christopher, Todd J., 4,286,290, Cl. 358-128.500.
Wilfong, Joseph R.: *See—*
Courts, Randall L.; and Wilfong, Joseph R., 4,285,158, Cl. 46-227.000.

Wilkinson, Walter J.; and Serlin, Irving, to Monsanto Company. Electrographic recording material, method of making and using. 4,285,989, Cl. 427-14.100.

Wilkuski, James E., to Johns-Manville Corporation. Method and apparatus for feeding batch material. 4,285,713, Cl. 65-27.000.

Willeitner, Eberhard; Hirschmann, Wilhelm; Maier, Erwin; Lammel, Georg; and Hass, Jurgen, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Arrangement for the retaining of tubes. 4,285,611, Cl. 403-374.000.

William H. Rorer, Inc.: *See*—
Chou, Billy J.; Yelnosky, John; and Riley, Richard L., 4,285,972, Cl. 424-326.000.

Williams, Charles F., to Westinghouse Electric Corp. Irradiation specimen installation apparatus with television inspection. 4,286,287, Cl. 358-100.000.

Williams, Danny L.: *See*—
Betz, Norman L.; Lanier, Kent J.; and Williams, Danny L., 4,285,974, Cl. 426-2.000.

Williams, James E., to Wilson Research & Development, Inc. Compact speed-reducing universal motor drive assembly arrangement for food processor. 4,285,473, Cl. 241-37.500.

Willinger, Sigmund: *See*—
Mathias, Richard G.; Novak, John D.; Rough, Robert R., Sr.; Small, Owen M.; and Willinger, Sigmund, 4,285,718, Cl. 65-134.000.

Willis, Gordon A., to Borg-Warner Corporation. Valve operator. 4,285,493, Cl. 251-14.000.

Willis, John H. Method and apparatus for the production of glass fibres. 4,285,711, Cl. 65-1.000.

Willis, Monte B., to Leather Life, Inc. Saddle oil. 4,285,688, Cl. 8-94.10R.

Wilson, Jonathan H., to Flinders Surfing Co. Pty. Ltd. Improved leg rope. 4,285,083, Cl. 9-310.00E.

Wilson Research & Development, Inc.: *See*—
Williams, James E., 4,285,473, Cl. 241-37.500.

Wilson, Thomas E. Device for measuring lubricating oil temperature supplied to an internal combustion motorcycle engine. 4,285,238, Cl. 73-346.000.

Winans, Eugene P. Card dispensing module. 4,285,443, Cl. 221-155.000.

Windmoller & Holscher: *See*—
Achelpohl, Fritz, 4,285,685, Cl. 493-406.000.

Winfrey, Carl T. Safety Screw driver. 4,285,255, Cl. 81-451.000.

Winzelberg, Abraham. Apparatus for use in forming a finish on a jewelry band. 4,285,505, Cl. 269-50.000.

Winzer, Gerhard, to Siemens Aktiengesellschaft. Branching device. 4,285,571, Cl. 350-96.180.

Wirth, Gallo & Co.: *See*—
Wirth, Johannes, 4,285,412, Cl. 177-179.000.

Wirth, Johannes, to Wirth, Gallo & Co. Scale protected against the ingress of dust and water. 4,285,412, Cl. 177-179.000.

Wise, Carl D.; and Heazel, Vincent M., Jr., to Westinghouse Electric Corp. Frequency spectrum noise generator. 4,286,228, Cl. 331-49.000.

Wolff, Joachim: *See*—
Gedrat, Klaus; Ehrich, Hans-Jurgen; Mahlkow, Hartmut; and Wolff, Joachim, 4,285,991, Cl. 427-97.000.

Wolff, Otto E., to Polaroid Corporation. Apparatus and method for reducing headlight glare. 4,286,308, Cl. 362-19.000.

Wolthausen, Edward C.: *See*—
Reba, Imants; and Wolthausen, Edward C., 4,285,452, Cl. 226-7.000.

Woltmann, Klaus W.: *See*—
Stewart, James B.; Woltmann, Klaus W.; Faris, Edwin E.; and Schmidt, Sheldon P., 4,285,813, Cl. 210-169.000.

Wong, Andrew H., to Minnesota Mining and Manufacturing Company. Polyester films with improved processability and tear resistance. 4,286,011, Cl. 428-220.000.

Wong, Joe, to General Electric Company. Varistors with upturn at high current level. 4,285,839, Cl. 252-519.000.

Wood, Daniel S.: *See*—
Bertozzi, Richard J.; Pavelek, Joseph M., Jr.; and Wood, Daniel S., 4,285,826, Cl. 252-117.000.

Wood, Glenn P.: *See*—
Kitzing, Rainer; Whitear, Brian R. D.; Long, William E.; Reeves, David L. R.; and Wood, Glenn P., 4,285,859, Cl. 260-152.000.

Woodring, Richard H.; Houtman, Paul K.; Kowalski, Thomas A.; and Whitmore, Charles H., to Parker-Hannifin Corporation. Electronic control for variable displacement pumps. 4,285,639, Cl. 417-218.000.

Worthington, Paul A.; and Parry, Keith P., to Imperial Chemical Industries Limited. Imidazolyl and triazolyl compounds, compositions containing them and methods of using them as plant fungicidal and growth regulating agents. 4,285,722, Cl. 71-92.000.

Wortman, Donald E.: *See*—
Morrison, Clyde A.; Wortman, Donald E.; Leavitt, Richard P.; and Karayianis, Nick, 4,286,230, Cl. 331-79.000.

Wright, David M.: *See*—
Hedstrom, Norman A.; Bogren, Robert G.; and Wright, David M., 4,285,555, Cl. 312-184.000.

Wright, Douglas C.: *See*—
Holland, Arvin E.; Wright, Douglas C.; Baker, John R.; and Curington, Alfred R., 4,285,399, Cl. 166-113.000.

Wright, George J.: *See*—
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., 4,285,957, Cl. 424-267.000.
Carr, Albert A.; Dolfini, Joseph E.; and Wright, George J., 4,285,958, Cl. 424-267.000.

Wright Line Inc.: *See*—
Hedstrom, Norman A.; Bogren, Robert G.; and Wright, David M., 4,285,555, Cl. 312-184.000.

Wrulich, Herwig: *See*—
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Wulff, Karl; Stahler, Fritz; and Gruber, Wolfgang, to Boehringer Mannheim GmbH. Method and reagent for the determination of creatine kinase. 4,286,057, Cl. 435-8.000.

Wulms, Christiaan J. G. H.: *See*—
Kamps, Hubertus E. L.; and Wulms, Christiaan J. G. H., 4,286,148, Cl. 250-213.0VT.

Wunder, William G., to Ex-Cell-O Corporation. Apparatus and method for tie bar nut drive system. 4,285,384, Cl. 164-1.000.

Wyatt, Sidney G., to R.J. Hamer Limited. Emulsified film forming polymer and methylene chloride/water paint stripper. 4,285,827, Cl. 252-165.000.

Xerox Corporation: *See*—
Chiang, Anne A., 4,285,801, Cl. 204-299.00R.
Friend, Clifford K., 4,286,316, Cl. 363-131.000.
Lu, Chin H.; and Erhardt, Peter F., 4,286,038, Cl. 430-108.000.
Neyhart, James H.; Brown, George A.; Relyea, Lloyd A.; Scharfe, Merlin E.; and Pinsler, Heinz W., 4,286,033, Cl. 430-58.000.
Silverberg, Morton, 4,285,590, Cl. 355-8.000.

Yagi, Kenkichi: *See*—
Tanaka, Minoro; Yagi, Kenkichi; and Shimizu, Kitao, 4,286,014, Cl. 428-290.000.

Yamada, Morio, to Toyo Seikan Kaisha, Ltd. Method and apparatus for cutting and peeling the packaging material of an elongated package containing a product. 4,285,625, Cl. 414-412.000.

Yamada, Shizuo: *See*—
Takahara, Yasuo; Hayashi, Shigeo; Yamada, Shizuo; and Shibata, Norio, 4,285,317, Cl. 123-568.000.

Yamada, Yu, to Canon Kabushiki Kaisha. Copying lens system. 4,285,579, Cl. 350-470.000.

Yamaguchi, Akio: *See*—
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Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Iio, Toshimitsu, 4,285,311, Cl. 123-323.000.

Yamaki, Kiyoshi; and Morimoto, Yoshiro, to Nissan Motor Co., Ltd. Speed-change control system for an automatic transmission. 4,285,252, Cl. 74-866.000.

Yamamoto, Shigeyuki, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Optical scanning apparatus. 4,285,566, Cl. 350-6.600.

Yamamoto, Tadahiro: *See*—
Yoneda, Kenji; Yamamoto, Tadahiro; and Sugihara, Kunihiko, 4,285,318, Cl. 123-568.000.

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Machida, Yoshimasa; Saito, Isao; Yamanaka, Motosuke; Nomoto, Seiichiro; Negi, Shigeto; Kitoh, Kyosuke; Katsu, Kanemasa; Ohya, Yukio; Suzuki, Takeshi; and Koizumi, Kyoko, 4,285,939, Cl. 424-246.000.

Yamashita, Kiyoshi: *See*—
Ishikawa, Wataru; Satoh, Ryosuke; Yamashita, Kiyoshi; Usui, Tugumoto; and Kato, Katsunori, 4,286,053, Cl. 430-389.000.

Yamashita, Nobuo; and Maeda, Miwako, to Olympus Optical Co., Ltd. Photo eyepiece for endoscopes. 4,285,578, Cl. 350-410.000.

Yamazaki, Masaru, to Copal Company Limited. Light measuring apparatus. 4,285,582, Cl. 354-23.00D.

Yang, Kang, to Conoco, Inc. Dioxane removal from ether sulfate. 4,285,881, Cl. 260-458.00R.

Yao, Shi-Kay; and Gudmundsen, Richard A., to Rockwell International Corporation. CCD Driven integrated optical modulator array. 4,285,569, Cl. 350-96.140.

Yarwood, John C.: *See*—
Kindlmann, Peter J.; Yarwood, John C.; Ungarean, Gary L.; and Tyler, Derek E., 4,285,387, Cl. 164-603.000.

Yasuda, Yoshinobu: *See*—
Nakazeki, Tsugito; and Yasuda, Yoshinobu, 4,285,312, Cl. 123-378.000.
Nakazeki, Tsugito; and Yasuda, Yoshinobu, 4,285,313, Cl. 123-389.000.

Yau, Wallace W.: *See*—
Dilks, Charles H., Jr.; Kirkland, Joseph J.; and Yau, Wallace W., 4,285,809, Cl. 209-155.000.
Kirkland, Joseph J.; and Yau, Wallace W., 4,285,810, Cl. 209-155.000.

Yehl, Gregory C.: *See*—
Jacques, Joseph L., Jr.; Smith, Michael D.; and Yehl, Gregory C., 4,286,246, Cl. 337-94.000.

Yelnosky, John: *See*—
Chou, Billy J.; Yelnosky, John; and Riley, Richard L., 4,285,972, Cl. 424-326.000.

Yen, Shiao-Ping S.; Rembaum, Alan; and Landel, Robert F., to California Institute of Technology. Functional magnetic microspheres. 4,285,819, Cl. 210-679.000.

Yezek, Milton; and Adams, Joan M., to General Foods Corporation. Process for preparing carbonated liquids. 4,285,977, Cl. 426-67.000.

Yi, Kenneth C.: *See*—
Hagerty, Robert O.; Lee, Jannan G.; and Yi, Kenneth C., 4,285,602, Cl. 366-177.000.

Yokohama Rubber Co., Ltd., The: *See*—
Kageyama, Kunio; and Hayashi, Tetsuo, 4,285,854, Cl. 260-37.00N.
Yokoyama, Yuji: *See*—
Tanabe, Rippei; Yokoyama, Yuji; and Hirano, Jiro, 4,285,872, Cl. 260-348.120.
Yoldas, Bulent E., to Westinghouse Electric Corp. Transparent high temperature resistant aluminum silicon oxide monolithic member or coating. 4,286,024, Cl. 428-446.000.
Yoneda, Kenji; Yamamoto, Tadahiro; and Sugihara, Kunihiko, to Nissan Motor Company, Ltd. Exhaust gas recirculation system having flow control valve combined with supersonic nozzle. 4,285,318, Cl. 123-568.000.
Yoshida Kogyo K. K.: *See*—
Ishida, Kinji, 4,285,166, Cl. 49-63.000.
Nishiyama, Hissai, 4,285,371, Cl. 139-97.000.
Yoshida, Koichi; Hayano, Fusakazu; and Ii, Yoshiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyaryl ether sulfone semipermeable membrane and process for producing same. 4,286,015, Cl. 428-305.000.
Yoshida, Masatoshi; and Hirai, Minoru, to Toho Beslon Co., Ltd. Process for production of activated carbon fibers. 4,285,831, Cl. 252-423.000.
Yoshida, Mitsuo; Nakamura, Akira; Ohmure, Keiichi; and Ono, Atsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of producing an electrode. 4,285,798, Cl. 204-290.00F.
Yoshikawa, Hiroshi, to Nippon Kayaku Kabushiki Kaisha. Process for producing 2-chloro-6-nitrobenzonitrile. 4,285,883, Cl. 260-465.00G.
Yotsutsuji, Akira; Ueda, Seiichi; and Uemura, Kiyoshi, to Osaka City. Valve nozzle of injection molding machine. 4,285,661, Cl. 425-563.000.
Yotsutsuji, Akira; Ueda, Seiichi; and Iwami, Hiroyuki. Method of making an insulated metal mold. 4,285,901, Cl. 264-225.000.
Young, David E.: *See*—
Garrett, William R.; and Young, David E., 4,285,406, Cl. 175-195.000.
Young, Morris S.; and Larbalestier, David C., to Airco, Inc. Wrapped tantalum diffusion barrier. 4,285,740, Cl. 148-11.50Q.
Young, Robert G.; and Skwirut, Henry, to Westinghouse Electric Corp. Compact fluorescent lamp having a partitioned envelope. 4,286,190, Cl. 313-493.000.
Yuen, Shokichi: *See*—
Sugimoto, Kaname; and Yuen, Shokichi, 4,285,929, Cl. 424-85.000.
Zahnradfabrik Friedrichshafen, AG.: *See*—
Elser, Dieter, 4,285,266, Cl. 91-375.00A.
Elser, Dieter, 4,285,366, Cl. 137-625.230.
Zakaria, Moneeb; and Slovinsky, Manuel, to Nalco Chemical Company. Water-based anti-blemish paint. 4,285,897, Cl. 264-130.000.
Zalessky, Eduard A.; and Smyshlyaev, Vladimir V. Method and device for discriminating difference frequency of two pulse trains. 4,286,220, Cl. 328-133.000.
Zanardi, Mauro: *See*—
Bezzi, Giovanni; Pauluzzi, Ego; and Zanardi, Mauro, 4,285,645, Cl. 425-6.000.
Zandmer, Herbert M., executor: *See*—
Zandmer, Solis M., deceased; and Zandmer, Herbert M., executor, 4,285,398, Cl. 166-100.000.
Zandmer, Solis M., deceased; and by Zandmer, Herbert M., executor. Device for temporarily closing duct-formers in well completion apparatus. 4,285,398, Cl. 166-100.000.
Zapf, Otto W., to Knoll International, Inc. Furniture construction. 4,285,544, Cl. 297-440.000.
Zeidler, Georg: *See*—
Hansen, Guenter; Kolbinger, Hans J.; Scheuermann, Horst; and Zeidler, Georg, 4,285,860, Cl. 260-152.000.
Zerrer, Gerhard; and Beier, Roland, to Andreas Stihl. Apparatus for trimming plants. 4,285,127, Cl. 30-276.000.
Zhavoronkin, Vladimir G.: *See*—
Ermachkov, Vladimir G.; and Zhavoronkin, Vladimir G., 4,285,190, Cl. 56-341.000.
Zhukov, Alexandr P.: *See*—
Mikhailov, Anatoly P.; Tomarovsky, Petr F.; Mukanov, Arstan S.; Soloviev, Alexandr N.; Kononov, Evgeny A.; Zhukov, Alexandr P.; Leonov, Ivan P.; Grigorian, Shavarsh M.; Novinsky, Vladislav K.; Rabotkin, Jury I.; Poyarkov, Igor B.; Fedoseev, Viktor P.; Shelukha, Nikolai N.; Utinchiev, Amangeldy; Chursin, Boris V.; Kaliev, Dostan; and Ustich, Vladimir A., 4,285,189, Cl. 56-27.500.
Ziegler, George: *See*—
Luthi, Johannes; and Ziegler, George, 4,285,209, Cl. 62-238.300.
Zimmerman, Michael T.: *See*—
Garland, Thomas H.; and Zimmerman, Michael T., 4,285,576, Cl. 350-387.000.
Zimmerman, Robert L.: *See*—
McEntire, Edward E.; and Zimmerman, Robert L., 4,286,072, Cl. 521-118.000.
Zins, Howard M.; and Morris, Edward L., Jr., to Angelica Corporation. Long wetting time woven fabric. 4,286,012, Cl. 428-252.000.
Ziskind, Stephen A., to Foxy Products, Inc. Ventable steam cover for culinary vessels. 4,285,441, Cl. 220-231.000.
Zitser, Vitaly A.; Bachelis, Leonid V.; Morozov, Jury E.; Melnikov, Alexandr V.; Ivanov, Vladimir A.; Dreishev, Igor I.; Shartner, Eduard G.; Abaskalov, Vladimir D.; and Levinson, Vladimir A. Apparatus for preparation of fluidized sand. 4,285,599, Cl. 366-17.000.
Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, to Voest-Alpine Aktiengesellschaft. Assembly for cooling the teeth of the cutting head and the rock face. 4,285,549, Cl. 299-75.000.
Zlotnikov, Leonid A.: *See*—
Veselkov, Alex A.; Glumov, Ivan F.; Zlotnikov, Leonid A.; Maiko, Viktor P.; and Matusevich, Jury F., 4,286,270, Cl. 343-113.0DE.
Zoecon Corporation: *See*—
Brown, Thomas L.; and Henrick, Clive A., 4,285,954, Cl. 424-263.000.
Kohn, Gustave K.; and Baer, Ted A., 4,285,879, Cl. 260-453.700.
Zoleski, Benjamin H.: *See*—
Sung, Rodney L.; and Zoleski, Benjamin H., 4,285,823, Cl. 252-50.000.
Zukausky, Keith E., to Eaton Corporation. Cam actuated butterfly valve. 4,285,499, Cl. 251-229.000.
Zuzanov, Georgy I.; Mironkin, Iosif S.; Tsarik, Jury N.; Alexandrova, Natalia A.; Kamensky, Sergei N.; and Nevedomsky, Evgeny N. Apparatus for purifying air. 4,285,704, Cl. 55-274.000.
2500 Corporation, The: *See*—
Roth, David W., 4,285,470, Cl. 239-284.00A.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF AUGUST, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Allan, Arnold M.: *See*—
Olds, Dale F.; Allan, Arnold M.; and Warren, Charles H., Re. 30,722, Cl. 426-613.000.

Amerock Corporation: *See*—
Dargene, Carl J., Re. 30,717, Cl. 16-135.000.

Carter, Russell P., Jr.: *See*—
Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., Re. 30,721, Cl. 260-45.8NZ.

Dargene, Carl J., to Amerock Corporation. Quickly attachable and detachable hinge assembly. Re. 30,717, Cl. 16-135.000.

Etchell, Gordon, to Rockwell International Corporation. Saddle lockup for flexible printing plate. Re. 30,718, Cl. 101-415.100.

Greischar, Richard H.: *See*—
Klayum, Milton A.; and Greischar, Richard H., Re. 30,724, Cl. 361-124.000.

Heine, William K. Disc phonograph record playback by laser generated diffraction pattern. Re. 30,723, Cl. 369-18.000.

Heiss, Herbert L.; Yeater, Robert P.; and Carter, Russell P., Jr., to Mobay Chemical Corporation. Stabilized thermoplastic polyesterurethanes. Re. 30,721, Cl. 260-45.8NZ.

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Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 260,398, 8-25-81, Cl. D16-42.000.
Schweiger Industries, Inc.: *See—*
Nash, Stanley P., 260,332, Cl. D6-62.000.
Scovill Inc.: *See—*
Meisner, Edward H., 260,360, Cl. D8-301.000.
Meisner, Edward H., 260,361, Cl. D8-301.000.
Shun, So. Food chopper. 260,351, 8-25-81, Cl. D7-155.000.
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Smith, Morley L., to T. S. Simms & Co. Limited. Tool handle. 260,359, 8-25-81, Cl. D8-107.000.
Sollenberger, Edward: *See—*
Kane, Earl B.; and Sollenberger, Edward, 260,375, Cl. D10-40.000.
Soules, Thomas F.: *See—*
Schindler, Donald R.; and Soules, Thomas F., 260,398, Cl. D16-42.000.
Sparkomatic Corporation: *See—*
Castagna, John F.; and Emmerling, Ronald A., 260,389, Cl. D14-10.000.
Springer, Karl. Wall mounted shelf unit. 260,336, 8-25-81, Cl. D6-134.000.
Stanley Electric Co., Ltd.: *See—*
Ariga, Kazuo; and Akanuma, Youichiro, 260,441, Cl. D26-3.000.
Starwin Industries, Inc.: *See—*
Erwin, John R.; Staub, Anthony F.; and Staub, Norman T., 260,415, Cl. D21-212.000.
Staub, Anthony F.: *See—*
Erwin, John R.; Staub, Anthony F.; and Staub, Norman T., 260,415, Cl. D21-212.000.
Staub, Norman T.: *See—*
Erwin, John R.; Staub, Anthony F.; and Staub, Norman T., 260,415, Cl. D21-212.000.
Sunstar, Inc.: *See—*
Neely, Gerald C.; and Maekawa, Kiyoshi, 260,328, Cl. D4-25.000.
T. S. Simms & Co. Limited: *See—*
Smith, Morley L., 260,359, Cl. D8-107.000.
Tanaka, Koichi; Yamamoto, Toshio; and Konuki, Fumio, to Kabushiki Kaisha Universal. Pinball machine. 260,409, 8-25-81, Cl. D21-10.000.
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Yoshizawa, Keiichi, 260,339, Cl. D6-186.000.
Texas Novachem Corporation: *See—*
Redman, Samuel A., 260,353, Cl. D8-25.000.
Thermalloy Incorporated: *See—*
Kennington, David H., 260,388, Cl. D13-23.000.
Thermoplastics Incorporated: *See—*
Munoz, Donald L., 260,385, Cl. D12-156.000.
Thomas, Andrew Y. Chair. 260,335, 8-25-81, Cl. D6-70.000.
Thomas, Wesley L. Telephone. 260,391, 8-25-81, Cl. D14-53.000.
Thompson, Dennis M., to San Martin Winery. Wine bottle display bin. 260,337, 8-25-81, Cl. D6-153.000.
Tkac, Frank S. Combined alarm clock face and hands. 260,379, 8-25-81, Cl. D10-125.000.
Tomy Kogyo Co., Inc.: *See—*
Hirano, Toru, 260,412, Cl. D21-143.000.
Trombly, Edgar F., to Dart Industries Inc. Tumbler. 260,344, 8-25-81, Cl. D7-15.000.
Tuggle, Lloyd H., to Beaird-Poulan Division of Emerson Electric. Power handie for line trimmer and the like. 260,394, 8-25-81, Cl. D15-1.000.
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United States Gypsum Company: *See—*
Martinelli, Lawrence R., 260,438, Cl. D25-72.000.
Martinelli, Lawrence R., 260,439, Cl. D25-72.000.
Van Horn, Robert L. Chair. 260,334, 8-25-81, Cl. D6-65.000.
Watkins, Susan J.: *See—*
McGill, Lee E.; and Watkins, Susan J., 260,427, Cl. D24-8.000.
Watkins, Thomas J.: *See—*
Dunshee, Wayne K.; and Watkins, Thomas J., 260,368, Cl. D9-415.000.
Williams, Hugh M. Trailer jack foot. 260,382, 8-25-81, Cl. D12-55.000.
Williams, James W. Umbrella. 260,322, 8-25-81, Cl. D3-5.000.
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Wood, Arthur A., to Replicap Products, Inc. Captive sanitary cap for a beverage tank valve. 260,373, 8-25-81, Cl. D9-446.000.

Yamamoto, Toshio: *See*—
Tanaka, Koichi; Yamamoto, Toshio; and Konuki, Fumio, 260,409, Cl. D21-10.000.

Yoshizawa, Keiichi, to TDK Electronics Co., Ltd. Storage unit. 260,339, 8-25-81, Cl. D6-186.000.

Zappia, Maria I.: *See*—
Rabinowitz, Harold; and Zappia, Maria I., 260,327, Cl. D3-73.000.

Zatorski, John: *See*—
Jurusz, Jan; and Zatorski, John, 260,384, Cl. D12-154.000.

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Stirnadel, Alfred. Euphorbia plant. 4,761, 8-25-81, Cl. 68.000.

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CLASSIFICATION OF PATENTS

ISSUED AUGUST 25, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

46 4,285,067
202 4,285,068
314 4,285,069

CLASS 3

1.911 4,285,070
1.912 4,285,071
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CLASS 4

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	30	260,330		155	260,351		446	260,373		70	260,393		168	260,414		62	260,435
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